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See pages 19, 20, 22, 111, 113, 115 for catalogs and publications on municipal and civic subjects

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During May we hope you will remember to mention THE AMERICAN CITY.

Rates, Taxes, and Consumer Savings

Electric Utilities, Publicly and Privately Owned, Compared

IN the March issue of THE AMERICAN CITY (page 97) favorable editorial comment was made on the new type of publicity by public utility corporations which frankly concedes that tax payments come in the last analysis from the utility's customers, but points out that the consumers benefit from the expenditure of these funds for governmental services, municipal, state and federal.

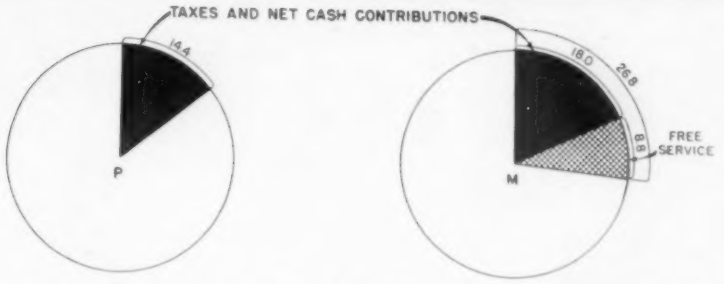
A 1939 publication of the Federal Power Commission* gives emphasis to another phase of the problem not discussed in the above-mentioned item.

For a fair comparison of the benefits of public and private utility ownership, consideration must obviously be given not only to rates paid by consumers and to the taxes paid by privately owned utilities, but to the cash contributions made and free services rendered by the public utilities. When all these factors are considered, the figures compiled by the Federal Power Commission for 691 privately owned and 537 publicly owned electric utilities for the years 1936 and 1937 show results definitely favorable to the publicly owned utilities as a group, both in lower rates to consumers and in their contributions in taxes, cash and free services as compared on a percentage basis with those of the privately owned utilities.

On the basis of totals for the United States, publicly owned utilities paid 17.3 per cent of their gross revenues in the form of taxes and net cash contributions in 1936. Privately owned utilities paid 13.2 per cent of their gross revenues for taxes and net cash contributions. Thus, the percentage in the case of publicly owned utilities is approximately one-third greater.

The combined total amount of taxes, net cash contributions, and free services furnished governments by publicly owned electric utilities for the year 1936 was 25.8 per cent of gross revenues and 13.2 per cent of gross revenues for privately owned electric utilities. Thus, the combined percentage in the case of publicly owned electric utilities is almost double that for privately owned electric utilities.

Using "base revenues," privately owned utilities are found to have paid 14.4 per cent of their revenues for taxes and net cash contributions, and publicly owned utilities paid 18 per cent of their base revenues. In addition, the publicly owned utilities furnished free services having an estimated value of 8.8 per cent of their base revenues. Thus, the total of taxes, net cash contributions, and free services, as measured by "base revenues," is 14.4 per cent for the privately owned utilities, and 26.8 per cent for the publicly owned utilities.



TAXES, NET CASH CONTRIBUTIONS, AND FREE SERVICE IN PERCENTAGES OF BASE REVENUES, 1936
P—691 Privately Owned Utilities. M—537 Publicly Owned Utilities

RESIDENTIAL ELECTRIC SERVICE
UNITED STATES AVERAGE TYPICAL BILLS IN 1937

COMMUNITY SIZE GROUP (POPULATION)	TYPE OF OWNERSHIP	AVERAGE TYPICAL BILLS IN PERCENT OF BILLS OF PUBLICLY OWNED UTILITIES		
		25 KWH	100 KWH	250 KWH
50,000 AND OVER	PRIVATE	131%	127%	120%
	PUBLIC	100%	100%	100%
10,000 TO 49,999	PRIVATE	111%	112%	107%
	PUBLIC	100%	100%	100%
2,500 TO 9,999	PRIVATE	106%	104%	98%
	PUBLIC	100%	100%	100%
1,000 TO 2,499	PRIVATE	96%	97%	91%
	PUBLIC	100%	100%	100%
250 TO 1,000	PRIVATE	95%	89%	78%
	PUBLIC	100%	100%	100%

FIGURE A.

COMMERCIAL LIGHT SERVICE
UNITED STATES AVERAGE TYPICAL BILLS IN 1937

COMMUNITY SIZE GROUP (POPULATION)	TYPE OF OWNERSHIP	AVERAGE TYPICAL NET MONTHLY BILLS IN PERCENT OF BILLS OF PUBLICLY OWNED UTILITIES		
		0.75 KW & 50 KWH	3 KW & 375 KWH	6 KW & 750 KWH
50,000 AND OVER	PRIVATE	140%	135%	144%
	PUBLIC	100%	100%	100%
10,000 TO 49,999	PRIVATE	117%	120%	123%
	PUBLIC	100%	100%	100%
2,500 TO 9,999	PRIVATE	108%	111%	114%
	PUBLIC	100%	100%	100%

FIGURE B.

COMMERCIAL POWER SERVICE
UNITED STATES AVERAGE TYPICAL BILLS IN 1937

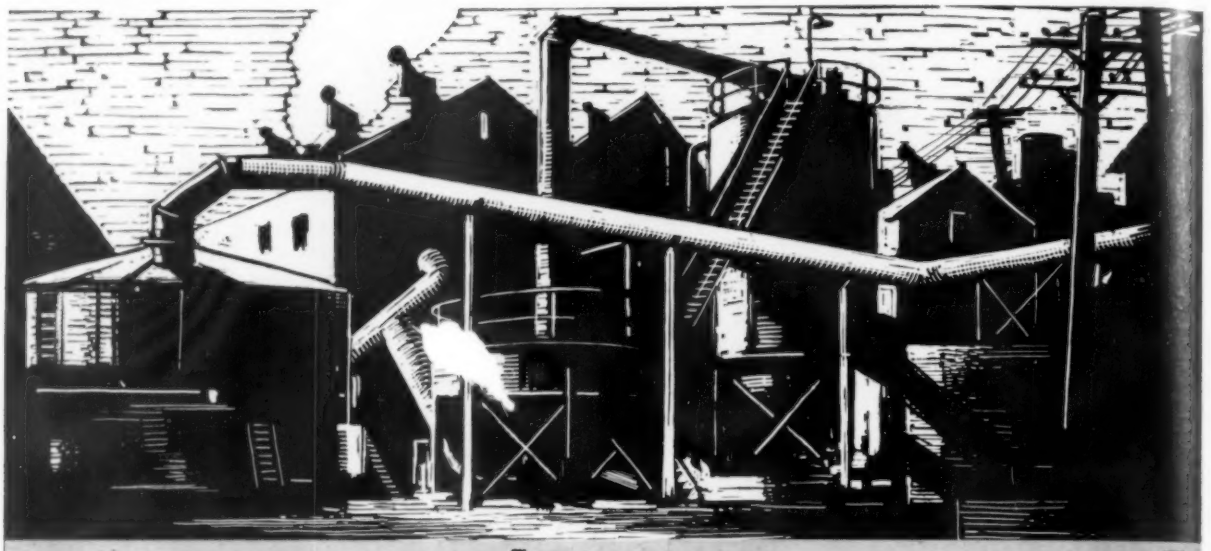
COMMUNITY SIZE GROUP (POPULATION)	TYPE OF OWNERSHIP	AVERAGE TYPICAL NET MONTHLY BILLS IN PERCENT OF BILLS OF PUBLICLY OWNED UTILITIES		
		3 KW & 375 KWH	12 KW & 1,500 KWH	30 KW & 6,000 KWH
50,000 AND OVER	PRIVATE	151%	158%	162%
	PUBLIC	100%	100%	100%
10,000 TO 49,999	PRIVATE	128%	134%	126%
	PUBLIC	100%	100%	100%
2,500 TO 9,999	PRIVATE	120%	124%	111%
	PUBLIC	100%	100%	100%

FIGURE C.

INDUSTRIAL SERVICE
UNITED STATES AVERAGE TYPICAL BILLS IN 1937

COMMUNITY SIZE GROUP (POPULATION)	TYPE OF OWNERSHIP	AVERAGE TYPICAL NET MONTHLY BILLS IN PERCENT OF BILLS OF PUBLICLY OWNED UTILITIES		
		150 KW 30,000 KWH	300 KW 60,000 KWH	1,000 KW 200,000 KWH
50,000 AND OVER	PRIVATE	137%	133%	131%
	PUBLIC	100%	100%	100%
10,000 TO 49,999	PRIVATE	113%	108%	103%
	PUBLIC	100%	100%	100%

* "Rates, Taxes and Consumer Savings: Publicly and Privately Owned Electric Utilities"; 15 cents from the Superintendent of Documents, Washington, D. C.



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Our Municipal Notebook

New Rubber Marker Placed in Hard Pavements

WHEN the Public Service Coordinated Transport of New Jersey was looking for a permanent traffic marker to indicate loading and unloading spaces at its many bus terminals, it asked George W. Andress, Engineer in Charge, Bureau of Streets, city of Newark, and was referred to THE AMERICAN CITY article on page 15 of the November issue describing the new rubber markers used successfully at Journal Square in Jersey City.

Maintenance-of-Way Superintendent E. D. Patterson at once sent for a representative of the Crown Highway Marker Co., Luzerne, Pa., and installed 743 Crown markers on three streets—of brick, bituminous concrete, and asphalt—around the big Newark terminal.

The marker is a 7-inch rubber and mineral composition disc impervious to oils, greases and road grime, with a non-skid surface safe for pedestrians; and though the circumference is flush with the road, it has sufficient convexity to provide high visibility. The squeegee action of tires running over the markers tends to clean them, an action which one can confirm by rubbing a soiled marker with a rubber shoe sole; and the convex surface rises ⅛-inch above the film of water which would more or less screen a flat marking.

Quickly Placed on Hard Surfaces

A jackhammer with a special blade for cutting 7-inch holes, and with a pilot on the center of the blade to steady the tool, made the holes ¾-inch deep, in the brick pavement on Pine Street. Cement mortar was buttered into the base of the white marker, which was placed as shown by the sketch. In two six-hour days a crew of three men installed the 320 markers here.

On the bituminous concrete of Raymond Boulevard and the asphalt pavement on Park Place, 280 and 83 markers respectively were installed. The material was first softened by a kerosene flame within a concentrating ring which confined the heat to the 7-inch spot. While still hot, a cutting blade turned by a breast-drill-like attachment, cut the hole ¾-inch deep. A small amount of high-melting-point asphalt was put into the hole, and the marker was tamped into place, until the top edge of the marker was flush with the top surface of the roadway. The regular crew of three men placed 30 to 40 markers per hour in the tough concrete.

In this interested group are E. D. Patterson, Superintendent of Maintenance of Way of Public Service Coordinated Transport, who selected the new markers; and Traffic Engineer J. W. Kane, Assistant Traffic Engineer Edward L. Cyr, Engineer in Charge of Streets George W. Andress, of the city of Newark, N. J.

Equal Chance to Park

AN old objection to the use of parking meters was that the streets belong to the public and no charge should be made for their use. The modern version is given by the Louisville, Ky., Board of Trade *Journal* for March, 1939:

"To us the parking meter is fair for all motorists. Why should one auto owner be privileged to park all day on a downtown street and force another to pay at a parking lot? Streets are public property and all should share alike in their use. The parking meter eliminates the parking 'hog' who stays in one choice spot all day. Anderson, Ind., has 15 penny devices for 15 minutes parking, 92 five-cent machines for one-hour parking, and 262 five-cent devices good for two-hour parking."

The Anderson meters, incidentally, were patronized to the tune of $18,250 in 1938.

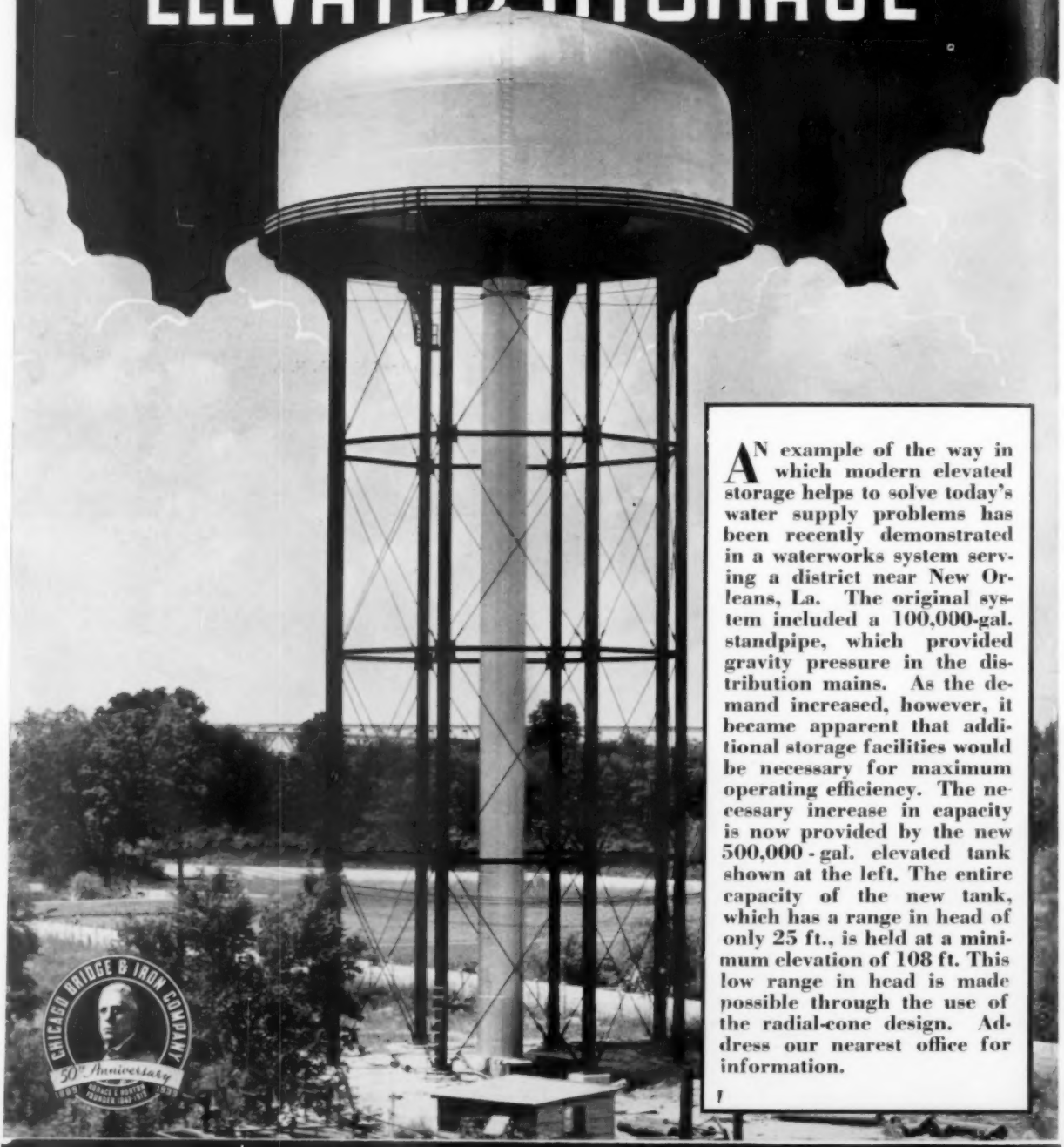
A Metal with a Brilliant Future

AT the mention of the word "aluminum," one man visualizes paint and another trolley coaches, but both think of lightness of weight. That quality in combination with structural strength has pyramided the uses of the product. In fact, during 1938 many new applications were found, says George J. Stanley, Vice-President, Aluminum Company of America. In 1939, Arkansas will use aluminum license plates, which Connecticut has used for three years, while seven states will use aluminum-painted plates. The fast-developing diesel engine for trucks and buses uses considerable aluminum. The light, sturdy qualities of the silvery white 51-year-old metal are indicated in this picture of the new one-man-operated power hydraulic Duralumin ladder built for the city of Newburgh, N. Y.

AERIAL LADDER OF DURALUMIN CHALLENGING TRIBOROUGH BRIDGE, N. Y.

An aerial truck is a lifesaver. It must be safe and it must be quick and flexible. Aluminum has reduced the weight about half, without any sacrifice in strength. The ladder is 65 or 75 feet high, and can be raised or lowered by hydraulic power by one man. The four-point positive-drive truck was specially designed by the Walter Motor Truck Co. for this aerial ladder equipment

Increased Demands Met with ELEVATED STORAGE



AN example of the way in which modern elevated storage helps to solve today's water supply problems has been recently demonstrated in a waterworks system serving a district near New Orleans, La. The original system included a 100,000-gal. standpipe, which provided gravity pressure in the distribution mains. As the demand increased, however, it became apparent that additional storage facilities would be necessary for maximum operating efficiency. The necessary increase in capacity is now provided by the new 500,000-gal. elevated tank shown at the left. The entire capacity of the new tank, which has a range in head of only 25 ft., is held at a minimum elevation of 108 ft. This low range in head is made possible through the use of the radial-cone design. Address our nearest office for information.

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Boston.....1501 Consolidated Gas Bldg.
Birmingham.....1502 N. Fiftieth Street
Dallas.....1406 Liberty Bank Bldg.
San Francisco.....1033 Rialto Bldg.
Houston.....2919 Main Street
Tulsa.....1625 Hunt Bldg.
Los Angeles.....1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water-Works Progress

Water Jobs on Efficiency Rating

JOBS in the Water Department in Dallas, Texas, have been removed from the bag of political patronage and placed on a merit basis, thereby giving to the city the benefits of a skilled and experienced personnel, and to the workers rewards for good service and security from unjust dismissal, according to J. B. Winder, Superintendent, Water Department, Dallas, in a report to the American Water Works Association. For six years all Dallas water employees, except the superintendent, have been under civil service. Such workers have been selected and promoted on the basis of merit. Applicants for positions must pass examinations with grades of 70 or better. Whenever an opening occurs, a man is selected for it from three names submitted by the Civil Service Board. Each new employee is put on 90 days probation, and if his work is satisfactory his employment is made permanent.

In making promotions, all employees in the next lower classification are permitted to take a "promotional examination" for the position. Employees may be eligible under more than one classification, if they so desire.

Every 90 days department heads of Dallas must submit to the Civil Service Board the efficiency rating of all employees. Additional compensation up to 1¾ per cent is given to employees with above-average ratings. Sometimes, if the service is of a nature to warrant special recognition, the board may grant special credits. A chemist was given an additional credit of 7 per cent for working out a water-purification method that saves the city about $4,000 annually. Employees passing the state examination for licensed water-works operators earn an extra ½ per cent.

Employees whose efficiency rating falls below 70 per cent are subject to dismissal after a hearing. An employee can be dismissed for other causes, but only after a hearing before the Civil Service Board, which is composed of three citizens.

Fast-Growing Town Adds Water Works

THE village of Creve Coeur, Mo., has claimed to be the "fastest-growing village in the United States" and this can well be understood when it does not appear in atlases which record villages of less than 1,000 population, nor does it appear in atlases of larger communities. It is listed on A.A.A. maps as having a population of 650, and Uncle Sam reports it as having a post office. The census of 1930 shows it having a population of 350, and it now claims a population of more than 3,000. It has recently completed the construction of a water-works plant and the installation of a modern fire system. The original proposition called for a program for which the village would raise $65,000 for materials and supervision by the sale of water revenue bonds, and the WPA would provide the equivalent of $80,000 in labor. Various delays prevented the opening of bids on the materials until the summer of 1937, by which time it was found that previous estimates were too low, so that the village agreed to finance the project to the extent of another $10,000, making its share of the project $75,000 in all.

The work has been completed and the new water system, approved by the State Health Department, was opened at the end of July, 1938. The system includes a 100,000-gallon elevated tank, which cost $11,800, and a pump station with a 250-gallon-per-minute capacity. At the time of the opening of the plant approximately 70,000 feet of water mains had been laid, with ample provision for future expansion of the system. A total of 725 service connections had been made and 70 fire hydrants were installed. A volunteer fire department has been organized, and equipment, including a complete supply of hose, has been purchased. All domestic users of water are billed at a flat rate of $1.66 a month, subject to a 10 per cent discount if paid before the 15th of the month.

A Warning of Unloading of Plants by Utilities

SPEAKING before the Minnesota Section of the American Water Works Association, Harry E. Jordan, Secretary of the American Water Works Association, asserted that "pressure is being exerted in many cities to stimulate the municipal purchase of utilities. In some cases it is evident that the pressure comes not from the citizens or their officials, but from investment organizations, attorneys and engineers who see a chance to profit by promoting the sale.

"There is nothing inherently wrong for investment bankers, in the face of lessened opportunities in private financing, to turn their attention to the field of municipal financing. But," continued Mr. Jordan, "the advantages of public ownership are often overpainted, and the citizens of a city are sometimes led to believe that they will get more for their money than they actually will receive from municipal ownership. Sometimes the interest rates on the bonds seem to be needlessly high, this detail escaping attention because interest is focused on the major question of municipal versus private ownership. There is also the danger that, in attempting to make the picture rosier, annual income available to meet revenue bonds may be overestimated.

"Income records under private management have a sad habit of shrinking when the municipality controls operations. Good management is possible under public as well as private ownership. Bad management likewise can occur under either type of ownership. Cities now considering purchase of privately owned utilities should be very sure that ample and wholehearted community support of the enterprise exists. They should also be sure that the city's record of managing its business affairs indicates that it will do a good job at management.

"If a city whose water is supplied by a privately owned company wants to buy the plant, sight should not be lost of the fact that the move is a business—not a sentimental — transaction," added Mr. Jordan, in his discussion. "City officials should drive a good, as well as fair, bargain. The interest rates on the new securities should be carefully held within reasonable figures and every effort made to enlist community support of good business management of the property when it is taken over."

Carrying Small Pipe

EXPERIMENTS in carrying pipe, made by the Board of Water Commissioners under the direction of D. J. Blackburn, Denver, Colo., have led to this conclusion: Two men carrying 2- or 3-inch pipe in 20- or 22-foot lengths should walk in step and hold the pipe on opposite shoulders. This causes better rhythm, less jouncing and less strain.

Guard Your Fire Hydrants

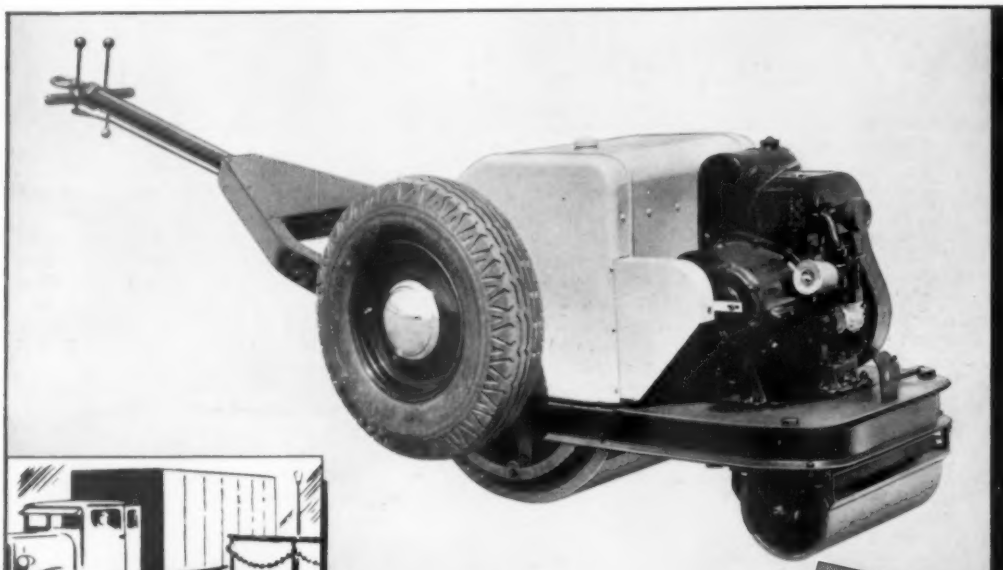
ONE Water Department which permits the use of fire hydrants for construction purposes frankly admits that it does not approve of the practice, as the valve is open only slightly, and if the drain is not closed, the hydrant is liable to be undermined.

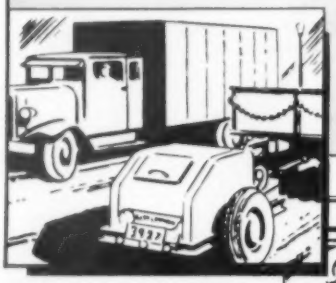
This same department permits water meters to be attached to hydrants for farm irrigation. This is a distinct hazard, since members of the local volunteer fire department are liable to be injured in using the hydrant in the dark when the pressure is turned on. Safety dictates the use of fire hydrants for fire purposes only.

Replace Hydrant Caps

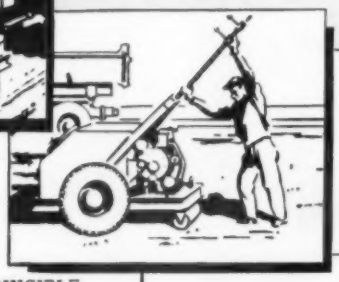
MILTON SEAMAN, Superintendent of Water, Greeley, Colo., writes us that when he was traveling in the East recently he noted in many cities that the caps were left off the fire hydrants. This is a very dangerous practice and should not be allowed. Where the street department, contractors or even the fire or water department makes use of a hydrant it should be required to replace the cap immediately.

Children playing around fire hydrants may easily throw a stone into the hydrant, which can plug a fire nozzle quickly, causing serious loss when the hydrant is in use for fire fighting.





TRAILS AT ANY SPEED
Model 150 will trail as fast as the truck will travel. Balanced evenly—underslung so that it trails perfectly. Will take curves as easily as the truck.



UP-AND-OVER PRINCIPLE
When on the job, just turn the tongue up-and-over to Rolling Position. This is the feature that makes this Wheeled Roller so popular. It's easy and simple.

NOW! IT WILL ROLL
Once in the rolling position, it is as simple to use as a baby buggy. One man can easily handle it for all operations. All controls are on the tongue.

ROLLED ROAD PATCHES *Save* TIME and MONEY

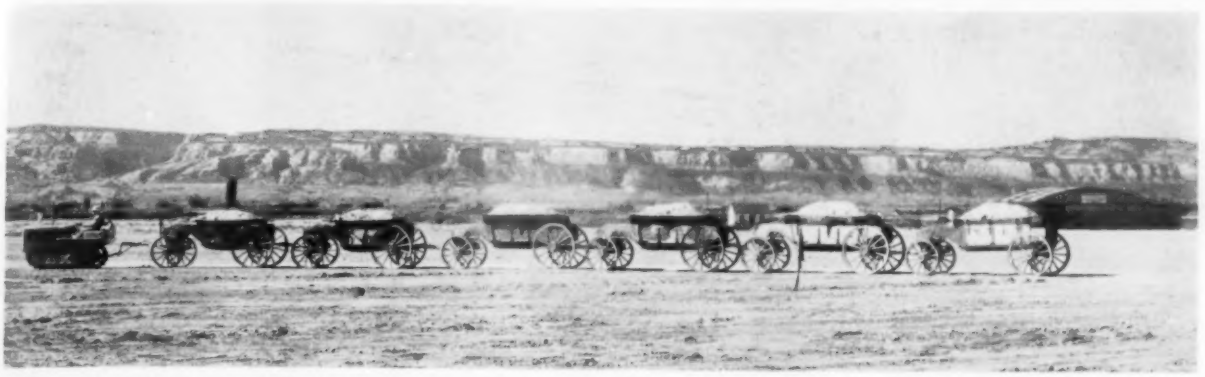
The Littleford Motorized Wheeled Roller Model No. 150 was designed to roll patches ranging from small pot holes to city blocks. Its ease of *portability* is the feature that makes it so desirable. Its tongue up-and-over principle is a unique feature. By moving the tongue up-and-over, you change the Roller from a trailing to a rolling position, and visa versa. Model No. 150 gives 150 lbs. compaction per inch of roller width. It's self propelled and easy to handle, whether on straight or curved work. Every Highway Department and Contractor should have this Roller for maintenance work. Write for details.

BLACK TOP ROAD MAINTENANCE EQUIPMENT
LB
SINCE - 1900

LITTLEFORD

500 E. Pearl Street . . . CINCINNATI, O.

Airport Progress



A DIESEL D2 TRACTOR HAULING SIX 2-YARD WAGONS FOR THE GRADING OF THE MUNICIPAL AIRPORT, GRAND JUNCTION, COLO.

Civil Aviation Program and National Defense

A DECLARATION that civil aviation development in the United States is being, and will continue to be, fitted into America's aviation program as a vital part of the nation's defenses, was made by Oswald Ryan, Member of the Civil Aeronautics Authority, at the dedication of the Harrisburg Municipal Airport. Mr. Ryan said: "Civil aviation is the backlog of aerial preparedness for the national defense, and the new Civil Aeronautics Authority is addressing itself to the task of supplementing and strengthening the air programs of both the Army and the Navy. The Authority's efforts in this direction will be coordinated at all times with the defense programs of the Army and Navy so there will be no conflict or lost motion in a united air defense policy. Both the Army and Navy realize that private flying and scheduled air transportation have created, and will continue to create, an invaluable aeronautical reservoir from which the armed forces of the country can quickly recruit both men and machines in the event of a national emergency.

"It is not the intention of the Civil Aeronautics Authority to militarize civil aviation, but it is a fundamental and self-evident fact that thousands of young men skilled in the basic principles of flying could quickly be adapted to military needs if necessity arises, and that a thriving aircraft industry, basically supported by the requirements of civil aviation, likewise could be turned to defense purposes on short notice."

South Carolina Airports Maintained by Mowers

OF the 24 airports in South Carolina, 15 are of the landing-strip type, 5 are all-way fields, and 4 have paved runways. They have a total area of 2,704 acres, 1,848 acres of which is suitable for various types of aircraft operation. In March, 1935, the Legislature of South Carolina passed the State Aeronautics Regulatory Act, which created the South Carolina Aeronautics Commission and included in the bill provisions for promoting the welfare of aviation within the state. The Commission is supported entirely by funds provided from the state aviation gasoline tax. By the use of three International wheel-type tractors equipped with mowers, and three 1½-ton International motor trucks for hauling the tractors, the Commission has solved the knotty problem of maintaining these 24 airports distributed over the state.

So often municipalities exhaust appropriations in building their airports and nothing is available for maintenance. In fact, this problem of proper maintenance of airports is causing nation-wide concern. A neglected airport can very quickly become a hazard to aviation instead of an aid. Tall grass and weeds are particularly dangerous, for they not only interfere with landing and take-off, but often cover up bad landing spots such as holes, ruts and soft areas.

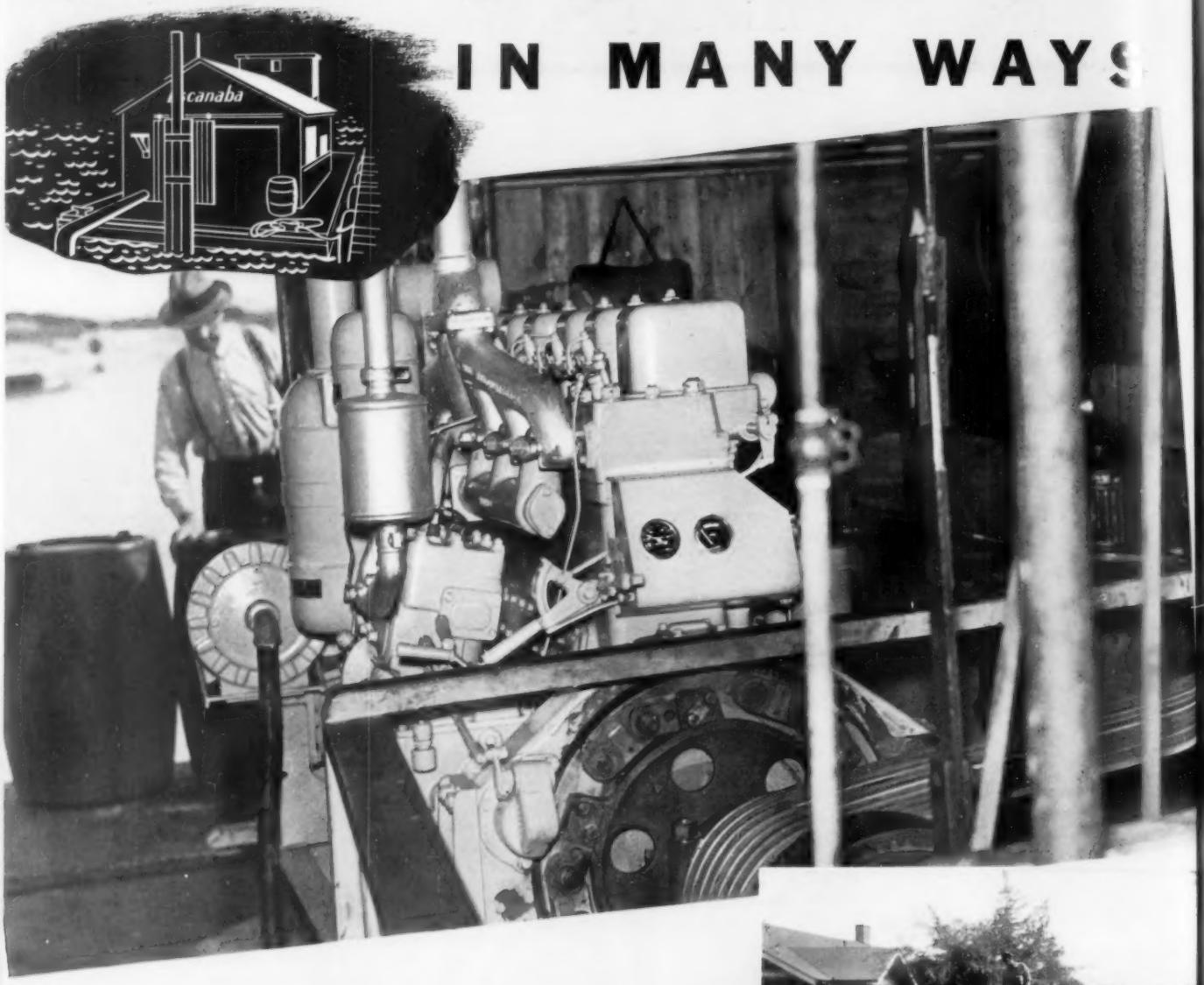
Each of the South Carolina trucks is provided with special sideboards which can be removed and fastened to the rear to serve as runways for the tractor to travel onto the truck on its own power. The No. 112-V 7-foot vertical lift power mower attached to each tractor is a recent development. It is designed so that the cutter bar may be raised to a full vertical position for passing obstacles without having to stop the tractor or disengage the power take-off shaft. The cutter bar can also be operated at extreme uphill or downhill angles in cutting grass along drainage ditches or banks at the edge of fields. From 25 to 35 acres is the average cut with a single mower per day.

While one of the tractors is at work mowing, the motor truck that hauled it to the airport is generally used on various maintenance jobs, particularly in hauling dirt to fill the holes, ruts and soft spots which are discovered when the grass is cut. The tractor itself has a maximum engine horsepower of 22 and operates at 3½, 6 and 10⅜ miles per hour at an engine speed of 2,000 rpm. It takes from two to seven days to mow an air field completely, and it is necessary to cut the grass every month and a half.

The South Carolina Aeronautics Commission has accomplished much in establishing an efficient, planned system of airports and airways in South Carolina and in maintaining them. Dexter C. Martin is Director, and E. F. Markwood Assistant Director, of the Commission.

TWO OF THE TRUCK AND TRACTOR MOWING OUTFITS USED BY THE SOUTH CAROLINA AERONAUTICS COMMISSION FOR AIRPORT MOWING

CITY SAVINGS IN MANY WAYS



NOT EVERY city has dredging problems, but every city needs power. And this dredge, owned by the City of Escanaba, Mich., offers an example of the economy and versatility of "Caterpillar" Diesel Engines. The D13000 (125 horsepower) shown here drives all the machinery on the dredge, including an 8-inch sand pump—and uses *only about 5 gallons of 10c fuel per hour*. Not only is the hourly cost far less than with the type of power formerly used, but the output of dredge is considerably greater.

Similar savings greet taxpayer and city management when "Caterpillar" Diesels take on the powering of municipal pumping systems, stand-by lighting generators, sewage disposal plants, air compressors or rock crushers.

In road machinery, "Caterpillar" Diesel Power is also a money saver. "Caterpillar" Diesel Auto Patrols have been the forerunners of many a local "boom." Their economical operation, their versatility and their amazing capacity enable keeping streets "in the pink of condition" on comparatively modest budgets.

No other type of equipment can make highway dollars go so far! In addition to regular maintenance work, it makes possible the opening of new streets, the extension of old ones, the encouraging of new developments, subdivisions or expansion projects that attract new capital, invite new residents, increase employment. Investigate!

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

The No. 12—latest, largest and most improved "Caterpillar" Diesel Auto Patrol. Two-speed one-man power control, high axle clearance, full-revolving blade (for working forward or backward without turning—as in narrow quarters). Grades, blades, mixes surface materials, builds shoulders, digs ditches, slopes banks—with speed and capacity that make its first cost a minor consideration.

CATERPILLAR

DIESEL ENGINES, 9 sizes • TRACK-TYPE TRACTORS, 5 sizes

DIESEL-ELECTRIC GENERATOR SETS, 9 sizes • AUTO PATROLS, 3 sizes

City Streets and Street Cleaning

Chloride for Streets in Belgian Congo

THE technical services of the urban district of Leopoldville in the Belgian Congo are making tests on the use of calcium chloride for stabilizing the surface of a short section of Congo Boulevard at Kalina, according to the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.

A layer of earth approximately 4 inches deep is removed and replaced by two layers, each 2 inches deep, of a mixture of earth, clay, large-grained sand and calcium chloride. Experimental sections show that this layer hardens rapidly and becomes sufficiently compact and stabilized to prevent such surface irregularities as are often seen on colonial roads and which are usually attributable to the nature of the soil.

A 12-Month Clean-up Campaign in New York

A 12-month clean-up job in the five boroughs of New York City is about to be undertaken as a joint effort of the New York City Departments of Sanitation and of Health and the WPA. Débris will be cleared from vacant lots, and low areas will be drained and filled. Labor, material and equipment for this to an equivalent of $21,321,400 will be used. Of this, WPA will spend $20,084,678 for labor, or about 94 per cent of the total. About 24,000 persons will be employed on the project, of whom 84.9 per cent, or 20,370, will be unskilled labor.

In the borough of Manhattan 400 lots will be cleared of débris, the area to be cleared and graded totaling about 8,000,000 square feet. More than 20,000 cubic yards of fill and 1,000 cubic yards of concrete will be used. In Brooklyn, 6,100 lots will be cleared and useless buildings to a total of 25,400,000 cubic feet will be demolished. A total of 235,000,000 square feet of land will be cleared and graded, and 2,740,000 cubic yards of fill will be spread, and vitrified and concrete drainage pipe installed. In The Bronx, 3,000 lots will be cleared of débris amounting to more than 500,000 cubic yards, and about 400,000 cubic yards of fill will be spread in low areas. Also, about 50,000 cubic yards of fill for low areas must be excavated, and concrete work totaling 6,000 cubic yards will be laid. Nearly 150,000 lineal feet of ditch will be lined and drainage pipe installed.

In Queens, 4,500 lots will be cleared, totaling about 50,000,000 square feet, and about 3,700,000 square feet of city land will be top-soiled, fertilized, seeded and rolled. In low areas about 2,250,000 square feet of old ditches will be backfilled and 1,750,000 square feet of new ditches dug. Fill to a total of 792,000 cubic yards will be spread in low areas, and more than 550,000 lineal feet of subsurface drains will be built. Ditches running to a total of 120,000 lineal feet will be paved with salvaged blocks, and more than 200,000 square feet of concrete and 100,000 square feet of cinder walks will be built. In Richmond, 1,000 lots will be cleared and 1,200 acres of city property will be landscaped. Approximately 700,000 cubic yards of excavation and grading will be done, and more than 100,000 cubic yards of fill will be used in low areas. About 150,000 lineal feet of ditches will be paved, and more than 100,000 feet of vitrified and corrugated drainage pipe will be installed. Concrete and cement work will amount to a total of 4,000 cubic yards.

Bargains Offered in Street Paving

TAXPAYERS of Birmingham, Ala., have been buying street paving at about one-third the price to which they had been accustomed when the city alone had paid its normal share. Under an arrangement with WPA, additional street work was approved in the amount of $1,181,609, involving construction of 98 miles of streets, 77 miles of curbs and gutters, and 68 miles of sidewalks.

From North Birmingham to Red Mountain, East Lake to West End, streets and avenues are being resurfaced with asphalt and widened to 30 feet complete with gutters and sidewalks, at a cost of $1.25 to $2.00 per front foot to the property owner, according to the location of his lot. Normally, paving assessments cost each owner between $4.00 and $6.00. Under the paving plan, a group of citizens in a block sign a paving petition and present it to the City Commission. When each property owner has agreed to pay his share of the paving, the Commission passes an ordinance approving the project, and the work is done by WPA. The Federal Government, with general tax money, matches the local property owner's money in the approximate proportion of 2 to 1.

Repaving Bridge Deck for Heavy Traffic

THE upper roadway of the Queensboro Bridge, New York City, was opened to traffic last winter, following complete repaving with a non-skid pavement. It was closed to traffic for two months to permit this work. The job was planned originally for completion on April 30, 1939, and was finished in 5½ months. The final cost was $461,000, of which the city contributed $185,000 for materials and the rental of equipment. The cost per square foot on the approaches was the same as the estimate—63 cents per square foot. But on the main spans the actual cost figured $2.72 a square foot as compared with the estimate of $4.25 per square foot.

The project involved the removal and disposal of the existing granite block and wood block roadway and the construction of a new reinforced concrete pavement for a total length of 10,112 feet, varying in width from 22 feet 6 inches to 44 feet, a total area of 276,190 square feet.

The roadway proper is composed of three distinct types of reinforced concrete slabs. On the main spans between the two anchor piers, a 3-inch concrete slab reinforced with 2½-inch thick I-beam lock steel mat was used. On the Manhattan and Queens approaches to the main spans the concrete slab used was 5 inches in thickness, reinforced with a 3½-inch steel truss mat welded to the existing ½-inch steel plate roadbed. At the entrance approaches at the Manhattan and Queens ends of the roadway, a 5-inch concrete slab reinforced with two layers of heavy welded steel reinforcing fabric was used, the slab being laid on top of the existing 6-inch reinforced concrete slab roadbed.

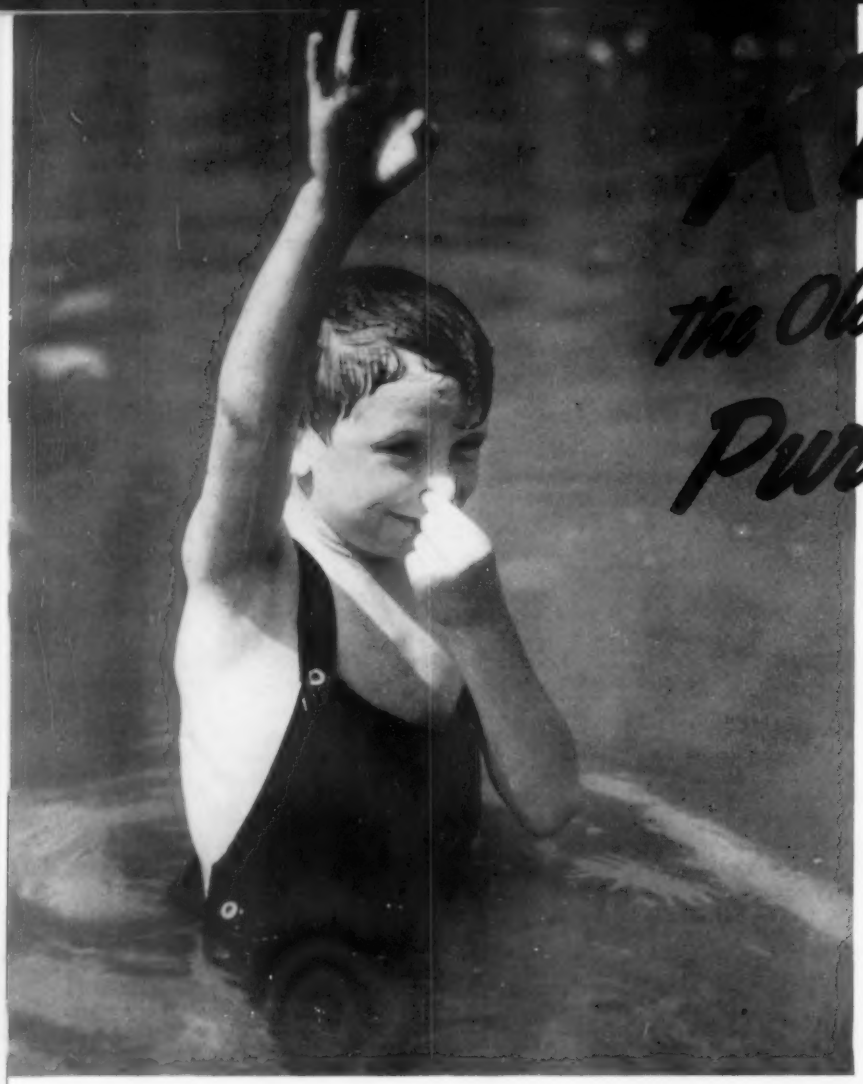
Plan to Use Leaves—Don't Destroy Them

IN many cities and villages leaves are considered a nuisance, and when individuals pile them in the gutter and street cleaning crews pick them up they are frequently put on a dump and burned. We know of several small-time gardeners in one small New York State village who arrange with the village truckmen to dump eight or ten loads of leaves on their gardens for plowing in before winter. Milwaukee is one of the larger cities which makes a profitable use of its leaves. The Street Cleaning Department allows them to decompose, and they are then used in flower-beds in the city's conservatories and parks. The method is to dump them into huge piles during the fall. When all have been collected, this pile is covered with a coating of black dirt and left to decay.

Recently a pile estimated to be 150 feet long, 50 feet wide and about 8 feet high, the result of 5,000 truckloads all picked up by the city's fleet of Elgin sweepers, was observed on the grounds surrounding the filtration plant, now nearing completion.

A short distance away was the pile accumulated the previous year, and in another part of the yard the pile accumulated the year before that. From this older pile, trucks have been busy hauling to the city parks a superior quality of rich, black dirt, in reality leaf mold formed by the decomposition of the leaves collected in 1936. C. O. Davis, Superintendent of Street Sanitation, reports there is a ready market for this material at $12 per ton, which is a welcome addition to the income of the Department.

—From *The Street Cleaner.*



KEEP the Old Swimmin' Hole Pure for Him, Too

Protect the Waters near Your City by Adequate Sewage-treatment Facilities

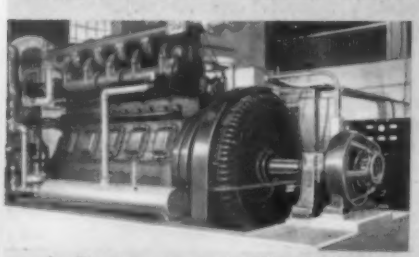
DON'T let pollution spoil swimming or fishing in the waters around your city. For only a fraction of a cent per person per day, modern plants can protect streams and lakes from the dangers of sewage pollution.

With adequate sewage-disposal facilities you not only turn surrounding waters into playgrounds, but you also help to protect your citizens from water-borne diseases. You safeguard, too, the property rights of people whose land borders the waters.

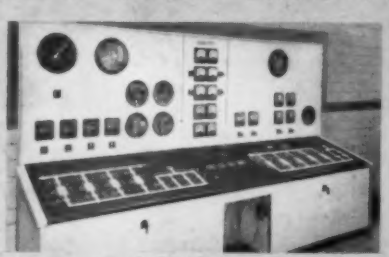
WHEN TO PLAN THE ELECTRICAL LAYOUT

In planning a sewage-treatment plant of any size, it's important to consider the electrical layout from the start. By calling in our engineers at that time, you can plan an electrical installation that will be successful and economical. We'll gladly work with your sanitary or consulting engineer. General Electric, Schenectady, N. Y.

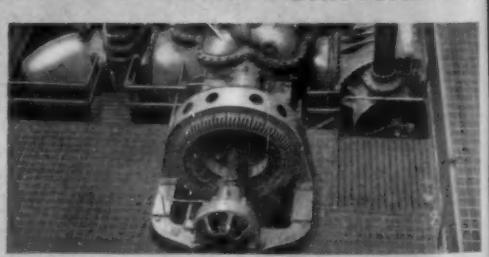
HOW G-E EQUIPMENT HELPS OTHER CITIES PROMOTE STREAM PURIFICATION



An Illinois sewage works utilizes its sludge gas to generate part of the power required by the plant. The gas engine drives a 285-kva G-E generator



An operator at this G-E control desk, with its miniature piping layout, can easily control the entire pump and blower station of the new Columbus plant



One of six G-E 1000-hp motors in Wards Island plant, New York City. A combination of adjustable-speed and synchronous motors makes for the highest possible efficiency

GENERAL ELECTRIC

011-414

Sewage Treatment and Stream Pollution

New Sewage Plants Check Stream Pollution

POLLUTION of streams and lakes in the United States accounts for a large and expensive waste of natural resources. Pollution is caused chiefly by the discharge of sewage and the dumping of industrial wastes. Within recent years great progress has been made toward the more flagrant evils attendant upon the discharge of sewage, and some progress has been made in the control of the discharge of industrial wastes, but this factor is still relatively untouched.

Progress in sewage treatment from 1932 to 1937 was unprecedented. The population served by sewage-treatment plants increased 73 per cent during that period, and at the end of 1937, approximately 37,000,000 people, or approximately half the nation's urban population, discharged waste through treatment plants. In 1932, treatment plants served a population of only 21,500,000. In 1932, there were only 2,900 treatment plants in incorporated localities; by 1937 the number had risen to 3,700 in service or under construction. This progress has been made possible by the expenditure of some $500,000,000 within the five-year period, most of it Federal money. It is estimated that another half-billion would be needed to provide treatment plants for three-quarters of the urban population by 1941.

The advances made in the control of industrial wastes are not nearly as encouraging as in sewage treatment. This condition is especially important because in many cities the volume of injurious industrial wastes discharged into lakes and streams exceeds the volume of domestic sewage. This same situation prevails, in even more exaggerated proportions, in many small mill towns. The principal sources of industrial wastes are paper and textile mills, canneries, distilleries, meat-packing plants and a host of others, including the coal-mining and oil-producing industries.

Studies made in 1937 by the Water Resources Division of the National Resources Committee showed that in one Michigan town 90 per cent of the injurious discharge into streams came from canneries and only 10 per cent from sewage. One Wisconsin town of 10,000 population had a large milk plant which contributed waste equivalent to an additional 18,000 people, and in the same state a town of 1,000 had a cannery which threw into streams waste equivalent to that of 7,000 humans.

There is evidence that some progress is being made. In Wisconsin, 21 paper mills which in 1931 discharged 108 tons of injurious paper fiber into streams each day, had reduced the discharge to 55 tons daily by 1937. Chicago has built a plant to handle packing-house waste, which eliminates an injurious discharge equivalent to the sewage of 1,200,000 persons. Of 54 paper mills in Michigan, only 19 now need waste treatment; of 240 textile plants in Rhode Island, 57 need treatment facilities. However, only 4 of 294 meat-packing plants in New York now treat their waste.

It is estimated that the acid discharged into the Ohio and Potomac watershed streams by coal-mining operations approximates 4,000,000 tons of sulphuric acid yearly. At least one-half of this comes from abandoned mines. It is estimated that some $2,000,000 already spent in sealing abandoned mines will reduce the sulphuric acid thrown into the two river systems by from 800,000 to 1,000,000 tons yearly.

Accurate data are not yet available as to the extent of the pollution from the highly mineralized waters, or "brines," produced by oil-well operations. In some fields adjacent to the Pacific Coast and also along the Gulf of Mexico, treatment plants have been constructed, but the costs are very high. A plant in California, for example, handles 100,000 barrels of brine a day; cost, $300,000. Substantially similar statistics were reported for a plant in the Salt Flat, Texas, field.

The handling of industrial waste is already the subject of extensive legislation in many states. The principal offenders are the older industries. New manufacturing plants are required by law generally to install waste-handling equipment.

Large Spherical Holder for Sewage Sludge Gas

A LARGE pressure gas holder of a comparatively new type, for storing gases from the digestion of sewage sludge, has been completed at the Cuyahoga Heights Southerly Plant of the $14,000,000 sewage-treatment project of the city of Cleveland, Ohio. The holder is a 57½-foot diameter arc welded sphere having a capacity of 200,000 cubic feet of free gas at 29.9 pounds operating pressure. The design and method of construction made it possible to obtain the required capacity in a structure which is considerably smaller than would be the case with other types of holders. The smaller size provides savings, not only in initial cost, but also in operating costs, since there are no moving parts.

The purpose of the holder is to store a portion of the gas produced in excess of normal consumption and to furnish deficiencies as required, as well as to maintain a uniform pressure in the service lines to the sewage gas operated engines. The sphere floats on the line in much the same manner as an elevated steel tank does in a water-works distribution system. The surplus gas compressed will be paid out into the service lines when production falls below the consumption as required by the laboratory, boilers and the two 400-hp gas engines. In normal operation of the plant, with the sphere off the line, gas is supplied at a pressure of approximately 8 to 10 inches of water, which is sufficient to supply the engines and boilers.

THE 200,000-CUBIC-FOOT SLUDGE GAS HOLDER AT THE SOUTHERLY PLANT, CLEVELAND, OHIO

In constructing the sphere, steel plate was cut and formed in such a way by the Chicago Bridge & Iron Co., Chicago, Ill., as to provide the desired shape when the pieces were assembled. Plate edges were scarfed to assure complete penetration of the welds made by the Fleetweld shielded arc type electrodes. All joints were butt welded from both sides. Where more than one bead of weld metal was applied, each bead was scraped, wirebrushed and peened before the application of the next bead. All welders employed in the construction of the holder were qualified in accordance with the U-69 qualification tests of the A.S.M.E. code for unfired pressure vessels. When erection was completed, the holder was tested to a pressure of 45 pounds per square inch minimum, at which time all joints were coated with linseed oil to test for leaks.

Glass Enclosures for Sewage Sludge Beds

MANY sewage-works engineers are enclosing sewage sludge beds in glass because of the definite savings and advantages these enclosures make possible. Regardless of outside weather conditions, sludge continues to dry in them all the year. Two to six more charges can be dried yearly than is possible in open beds. The area required for the sludge beds can therefore be greatly reduced, which is of advantage when the land available for the plant is limited or of high value.

The glass enclosures also take the offensiveness out of this function of sewage-treatment plants and make them less detrimental to surrounding real estate. They confine objectionable gases, flies and other insects where they can cause no trouble. They hide unsightly sludge beds, sprinkling filters and skimming tanks from view.

By glassing-in sewage sludge beds and other parts of a sewage-treatment plant it is possible to locate it in close proximity to populated areas and save the cost of long sewage lines to the plant.

You'll Never Feel Like This With BARCOs On the Job

Compact and portable, Barco Gasoline Hammers practically eliminate the word "inaccessible" when there's routine or emergency hammer work to be done. Any place a man can go, this hard-hitting, thrifty, breaking, cutting, driving, tamping and drilling tool will perform at top efficiency... finishing many jobs before other types of equipment could arrive.

Test a BARCO on some job that's tough and costly to handle. Clock it for time savings. Check transportation, fuel and operating costs. Then learn how nominal the investment is to have BARCOs on hand for year 'round service.

BARCO MANUFACTURING COMPANY
1803 W. Winnemac Ave., Chicago, Ill.

BARCO *Portable* GASOLINE HAMMER

Public Safety

Memphis Recommends Transportation Surveys

To the Editor of THE AMERICAN CITY:

Your article on transportation is worth while and on a subject which offers considerable room for improvement.

We are revising our City Plan in Memphis, and are making a complete study of the city transportation system. One of our problems is duplication of service.

In the City Plan, we are suggesting a revision in the transportation system which will eliminate considerable duplication and thus offer an opportunity for better service at lower operating cost. Cities which have not had a complete survey of their transportation system recently would find such a survey beneficial.

L. P. COCKRILL,
Engineer-Secretary, Memphis City Planning Commission.

Two-Way Radio a Winner

OUR year-old radio system puts a policeman at the scene of trouble in one to three minutes, and each patrol car covers expeditiously a district that would require five patrolmen on post. Without the cars, we should have to have another precinct at the South End, and to put on one more man (three shifts) costs $8,250 per year. Another advantage, of course, is that radio patrolmen are kept informed on what is happening throughout the 10½ square miles of the city.

The equipment used is a Western Electric two-way system installed by the Graybar Electric Co. At headquarters, we have a 25-watt transmitter to the nine cars equipped with crystal-controlled receivers and transmitters. These cars comprise seven Chevrolet coupès, one Chevrolet coach for detectives, and my Buick sedan. Complete control is handled by the desk lieutenant with a regular hand set and loudspeaker, all other equipment being in another room of the building.

WILLIAM MILLER,
Chief of Police, White Plains, N. Y.

Fire-Waste Awards for Lowest Fire Losses

THE city of Memphis, Tenn., again won the Grand Award in the National Inter-Chamber Fire Waste Contest, with the best record in fire prevention accomplishments among 300 cities. The winners of bronze engraved plaques in seven population classes for the best work done in fire prevention and protection fields are: Memphis, Detroit, Hartford, Conn.; Lakewood, Ohio; Parkersburg, W. Va.; and Freemont, Mich., and Valley City, N. Dak., tied.

Meters Regulating Pontiac Parking

CITY COMMISSIONER MAURICE BALDWIN OF PONTIAC DEMONSTRATES THAT CONVENIENT PARKING IS WORTH A NICKEL

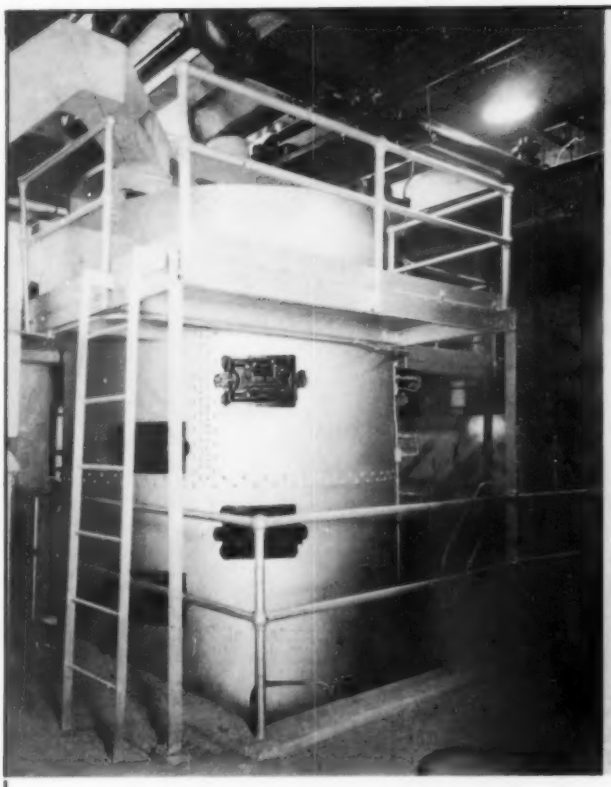
IN line with other progressive cities, Pontiac has installed 385 Dual Automatic parking meters. The installation was opened for service April 6, 1939. The immediate effect was so favorably impressive that all Pontiac is talking about the wonderful metered system. Everyone seemed to adopt the meters, and although we have had the meters only one week, they have met instant approval.

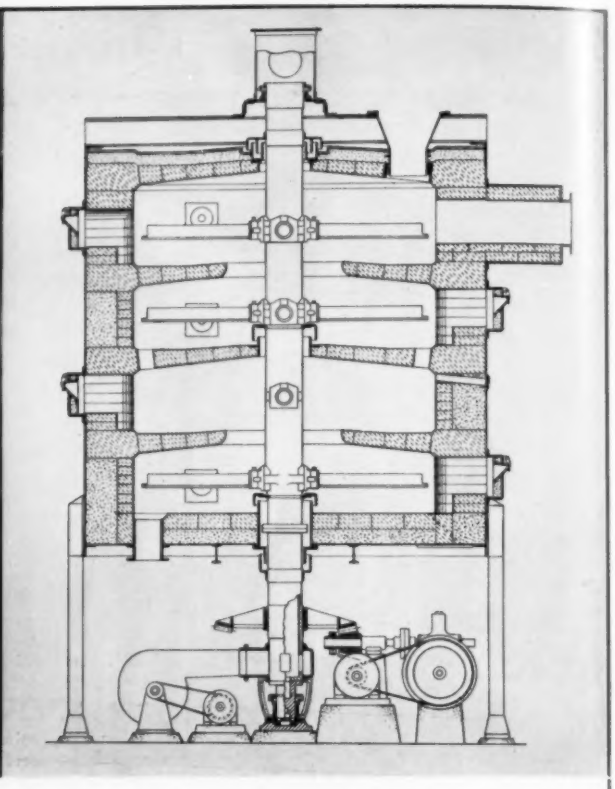
Merchants have reported an increase in business due to the fact that the old time all-day parker has been moved out of the metered zone. Customers report that they can park near the store where they desire to shop. Motorists state that they can now park readily on the streets of Pontiac, whereas under the old system they were forced to cruise from one to six blocks before finding a vacant space. Pontiac expected these results, but not such quick acceptance.

The daily collections from the meters for the first week averaged above 50 cents per meter, and the Police Department reports that Pontiac now has orderly controlled parking and that fewer police are being used in enforcement than with the old non-metered system. In fact, everybody is happy about the whole thing and the success of the meters in Pontiac is assured.

W. P. EDMONSON,
City Manager, Pontiac, Mich.

Courtesy of Pontiac News





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60 WALL TOWER NEW YORK, N. Y.

MAY, 1939

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The American City

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New York

35 Cents, $2 a Year

Fort Worth's Municipal Auditorium and Memorial Coliseum and Tower

By DUDLEY L. LEWIS
City Manager, Fort Worth, Texas

FINANCED by the municipality of Fort Worth with the aid of a 45 per cent PWA grant, the Municipal Auditorium and the Will Rogers Memorial Coliseum and Tower are a source of pride and of great civic benefit.

THE MEMORIAL COLISEUM IN FORT WORTH, TEXAS
See the view of the Memorial Tower and the Municipal Auditorium on the front cover of this issue

The Auditorium was designed to meet two entirely different needs of the city: first, a theater which will accommodate theatrical shows, symphony orchestras and grand opera, or any other type of entertainment for which the city may have need; second, a convention hall. For this particular purpose, there have been included committee rooms and space for exhibits, which are often a part of such gatherings. The building has a seating capacity of 3,000, and is a great addition to the entertainment facilities of Fort Worth.

The Auditorium building, which measures 137 by 209 feet, is of permanent construction throughout, with a reinforced concrete-and-steel frame and with masonry walls of brick and stone. The mechanical equipment is exceptionally complete.

The entrance lobby has a specially designed floor of terrazzo and walls of Texas shell stone. The remainder of the public portion of the building inside the Auditorium has asphalt tile floors over the concrete floor, thus giving much less noise during the gathering of the audience. The main stairs are of marble, and all the entrance spaces are treated with Texas shell stone.

The general design of the Auditorium has been kept simple and straightforward, with little or no attempt at ornate effects. This is in accordance with modern thought in architectural design. The seating has been so arranged that all seats in the Auditorium get a good view of the stage.

Hearing conditions are excellent throughout. A large amount of acoustical material has been used to bring about this result, which deserves especial mention, for no matter how beautiful a building may be or how well constructed, it fails of its purpose if the audience cannot hear well.

The stage proper measures 40 by 100 feet, exclusive of dressing rooms, and is of the most modern type. It has sufficient curtains, drops, etc., to accommodate almost any

FOYER OF THE WILL ROGERS MEMORIAL COLISEUM IN FORT WORTH

type of production. The symphony platforms were designed to meet the needs of a large symphony orchestra, and include space for an extra-large picture screen, which may be used for public address or sound pictures and to bring in outside broadcasts. The loud-speakers used are of the very latest type produced by RCA Corporation, and present a wonderfully well-balanced tone picture.

At the present time the building is equipped with a complete forced-draft heating and ventilating system, and provisions are made so that at a later time a complete air-conditioning system can be installed. The future installation of a pipe organ whenever feasible has also been planned.

The Coliseum building is of reinforced concrete and steel frame; it is 405 feet long and 234 feet wide, is fireproof throughout and designed for safety and convenient arrangement for horse shows, rodeos and cattle exhibits. The front of the lobby is of the same design as the Auditorium Building, with shell stone walls and terrazzo floor. The lobby alone measures 140 feet in length and 32 feet in width.

The area of the arena is 125 by 250 feet, and the seats are placed approximately 6 feet above sidewalk level. The seating capacity is 6,200, and for an exceptional attraction by using the arena a group of 15,000 can be assembled. A concourse which is 16 feet wide and 808 feet long extends around the seating space of the outer walls.

On the second floor in the front part of the building is a convention room 134 by 31 feet, which will seat approximately 400 people. The space in the arena available for exhibition purposes is 31,250 square feet, with some space in the foyer and lobby in the front of the building for display purposes. At present the floor of the arena is of hard clay covered with tan bark. Application has been made to the WPA, and approved, for the installation of a concrete floor, which can be utilized for ice sports, games, etc. The building has excellent acoustics, first-class lighting and the latest heating system—circulating hot air.

The Auditorium and Coliseum are joined by a foyer with the 208-foot Will Rogers Memorial Tower in the center. This foyer and tower are of the same architectural design as the other buildings. The center lobby of the tower is in the form of a rotunda, with panel tablets on the walls before the four principal openings, commemorating individuals and certain historical events in Texas history. The problem of providing proper interior lighting by day without resort to artificial illumination was solved by using gigantic panels of Insulex glass blocks, which let in floods of natural but diffused light and without creating a heating problem, the hollow blocks being partially evacuated. Similar panels are used in the Coliseum and the Auditorium, each with 27-foot panels of glass block above the entrance doors to illuminate the vast foyers by day.

The architects of the Auditorium were Wyatt C. Hedrick and Elmer G. Withers, of Fort Worth. The design and supervision were under the direct charge of Elmer G. Withers Architectural Company, Inc. The mechanical work was designed by R. K. Werner, of Fort Worth. A list of the amounts of various contracts are as follows:

Foundation	$10,289.17
General	336,133.93
Plumbing	9,963.04
Heating and ventilating	28,309.52
Sprinkler	2,092.45
Electric	57,086.20
Scenery	12,779.40
Seats	20,954.88
Sound pictures	9,952.00
Total	$487,560.59

The architects of the Coliseum and Tower were Wyatt C. Hedrick and Elmer G. Withers. A list of the amounts of the contracts on the Coliseum, the Tower, and the Horse Show Horses Building are as follows:

COLISEUM

Foundation	$15,315.42
General	461,379.79
Plumbing	8,600.00
Heating and ventilating	36,100.00
Electric	40,698.43
Seating	19,486.28
Total	$581,579.92

TOWER

Foundation	$6,729.87
General	100,270.53
Heating and Ventilating	1,856.00
Electric	7,980.00
Total	$116,836.40

HORSE SHOW HORSES BUILDING

Foundation	$5,055.76
General	96,982.45
Plumbing	2,287.00
Electric	1,418.00
Total	$105,743.21

Eight Traffic Fellowships Open at Northwestern

THE Northwestern University Traffic Institute announces eight fellowships of $1,200 each, available to municipal police officers during the 1939-40 academic year. They have been made possible by a grant of $10,000 made by the Kemper Foundation for Traffic Police Training, an organization sponsored by the Lumbermen's Mutual Casualty Co., and the American Motorists Insurance Co. The President of the Foundation is James S. Kemper, who also heads both companies.

Write Lieut. F. M. Kreml, Director, Northwestern University Traffic Institute, Evanston, Ill.

Model of Filtration Plant Helps Educate Public

St. Joseph, Mo., Exhibits Midget Plant at Exposition

WATER departments have been urged by THE AMERICAN CITY to sell their services to the consumers through courtesy at the bill clerk's window, through prompt handling of complaints, and by exhibits of various types at local fairs. One of the latest exhibits to come to our notice is that of the St. Joseph Water Co., built by three members of the staff for a recent Boy Scout Exposition.

A miniature purification plant in which as many parts as possible were made of glass so that the spectator could see in its entirety the process of changing the river water from its turbid raw state to the clear product supplied by the company to the consumers, made this an outstanding graphic exhibit. Through the courtesy of the American Water Works & Electric Co., Inc., a rather detailed description of the miniature plant is printed here, since other water companies and water departments may desire to build similar miniature units for publicity and exhibit purposes.

Details of the Model Plant

The model purification plant consists of two steel barrels each 16 inches in diameter by 18 inches high, a 52 x 22-inch table, the top of which is 27 inches above the floor, a 1/6-hp electric motor, a water pump taken from an old automobile, two settling basins, a filter, a jar used for clear water, three bottles with two-hole stoppers, used for alum, lime and chlorine, and the necessary piping, valves, baffles, troughs, sand and gravel.

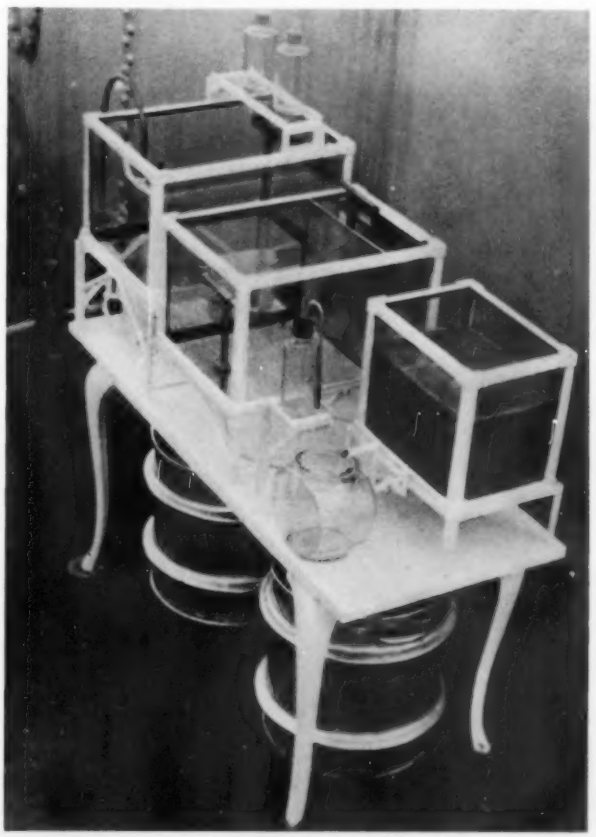
The suction hose to the pump is long enough so that it may be used to take suction from one barrel containing turbid river water or from the second barrel, which contains the clear water. The pump discharge piping is valved so that the discharge may go to the No. 1 settling basin and through the other processes; or that line may be valved off and clear water may be pumped to the grid system under the filters, thereby washing the filters. All piping for the model is $\frac{5}{8}$-inch tubing.

The four legs, or corners, of the settling basins and the filter are aluminum castings with rivet holes properly placed so that angle-iron may be riveted in the corners to form the four edges of the bottom and the edges of the top. The angle-irons used are $\frac{3}{4}$- x $\frac{3}{4}$-inch in size. The two settling basins are identical, each being $14\frac{1}{2}$ x 20 x $12\frac{1}{2}$ inches high. The walls and bottoms of each of the two settling basins are of plate glass, and the four walls of the filter are also plate glass, but the bottom of the filter is metal. Each of these three units is in effect a rectangular aquarium. Aquarium cement was used to hold the glass plate in position and to make the joints waterproof.

The first settling basin has a surface baffle extending the full $14\frac{1}{2}$ inches across the basin. This baffle is 6 inches deep and is located 7 inches from the inlet end of the settling basin. A copper trough is suspended from the angle-irons about $2\frac{1}{2}$ inches from the outlet end of the basin. Water skimmed off in this trough flows through a pipe to a trough at the end of No. 2 settling basin. A hole was cut through the plate glass side wall of No. 1 settling basin, and the overflow pipe goes through this hole.

The baffle in the second settling basin is a slotted baffle made of metal and extends from the top to the bottom of the basin. It is located about 5 inches away from the inlet end of the second basin. Water is skimmed off the second basin at the outlet through two vertical risers which are connected through ells and a tee to a single pipe which goes through the glass bottom of the second basin.

The pipe connection from this point leads out beneath the filter, and a vertical riser then extends through the bottom of the filter to a point about $1\frac{1}{2}$ inches above the level of the sand in the filter. There is about $2\frac{1}{2}$ inches of gravel and 6 inches of sand in the small filter. On the bottom of the filter a grid system was constructed of $\frac{1}{4}$-inch copper tubing laterals and $\frac{3}{8}$-inch header with 49 $\frac{1}{8}$-inch holes drilled in the bottom of the laterals. The filtered



THE WELL-BUILT MODEL OF THE PURIFICATION PLANT AT ST. JOSEPH, MO.

water flows from this grid system into a pipe and thence to a jar referred to as the clear water well. The overflow of the clear water well is piped to the clear water barrel under the table. The filter measures 10 x 14½ x 12½ inches deep.

The first settling basin stands on small legs about 9½ inches above the top of the table. The motor and pump are located under this No. 1 settling basin. The second settling basin is also on legs, with the bottom about 6½ inches above the table. The filter is about 1 inch lower than the second basin.

A platform was constructed over the outlet end of No. 1 basin on which to stand the bottle of alum solution and of lime solution. These solutions are syphoned out and the amount controlled by hose pinchers so that the chemicals are applied to the troughs leading to No. 2 basin, drop by drop. Chlorine solution is also added to the clear water basin in the same manner.

A good floc forms in No. 2 basin just as at the plant. Real, full-sized filter strainers were cut into two halves and placed against the glass walls in the gravel to show how the strainer system looks. These were too large for actual service in the model and therefore were used as dummies only.

The operation of the model plant follows very closely the major processes of the purification system at the pumping station of the St. Joseph Water Co. The raw water used has a turbidity of about 1,000 ppm. No. 1 basin is used for sedimentation only, the chemical treatment being made in the second basin. The filtered water is sparkling clear.

Because of the quantity of glass in the model it would probably be impracticable to try to ship the exhibit extensively, but it can be easily assembled by any ingenious water-works operators and be available for local operation. The St. Joseph model was made by J. Pauli, Joseph Bumbacher, Jr., and John Smouse, respectively Assistant Engineer, Chief Engineer, and Chemist at the purification plant and pumping station of the St. Joseph Water Co. Robert S. Millar is Manager of the company.

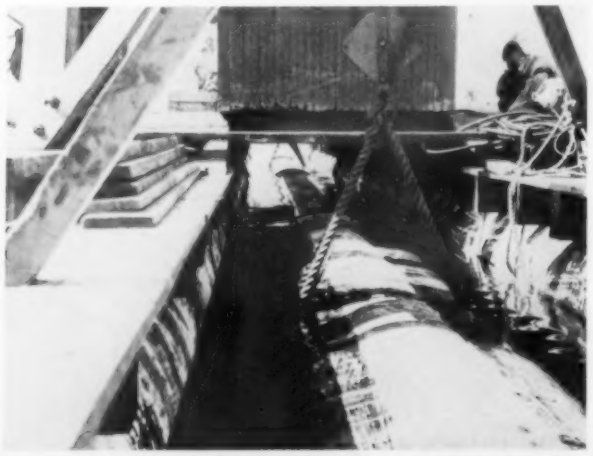
Improvements at Skaneateles Lake

Gate-House and Intake Rebuilt by Syracuse Water Supply Employees

DURING the past year the work of the Water Supply Division, Department of Engineering, Syracuse, N. Y., has been quite extensive, including the construction of a new intake and a new gate-house at Skaneateles Lake, several important new feeder lines in the city, and a new high-service reservoir. This work has been handled entirely by city forces, in addition to their regular maintenance of the distribution system.

The New Gate-House

Prior to 1938, all the water taken from Skaneateles Lake for the use of the city entered the distribution system through a 54-inch steel pipe intake which extended 6,400 feet into the lake. This intake was laid over forty years ago, and at present has a maximum safe flow capacity of 37.5 million gallons per day. In warm weather, on days of high consumption, the amount of water used exceeds this capacity by several million gallons, and it has been necessary to draw from the storage in the two service reservoirs to make up the deficiency.



LOWERING THE NEW 54-INCH STEEL INTAKE PIPE INTO PLACE AT SKANEATELES LAKE, SYRACUSE, N. Y.

The gate-house previously existing at Skaneateles was big enough only to house the necessary valves for controlling the flow from the old intake and the necessary chlorinating apparatus. The inspector in charge of operations occupied an old dwelling nearby. In connection with the construction of the new intake it was necessary to build new flow wells adjacent to those of the old intake, so that the flow from the new supply line could be chlorinated and diverted to the conduit connecting the city distribution system with the intake. It was also necessary to provide a connection between the existing and the proposed intake wells, and the proposed third supply conduit to the city, a portion of which has been built. It was decided to build the new intake wells and outlet directly abutting the existing wells and to use the walls of the old and new intake wells as a foundation for a new gate-house, which, in addition to housing the necessary control and sterilizing apparatus, would be sufficiently large to provide living quarters for the inspector.

The new intake wells were completed in 1937. The section of the new intake extending from the gate-house to the shore line of the lake had been completed previously. This consisted of 200 feet of 60-inch cast iron pipe.

The New Intake Pipe

The underwater section of the new intake was constructed during 1938. It is composed of a 55-inch outside-diameter welded steel pipe, furnished by the Bethlehem Steel Co., and coated inside and out with Wailes-Dove Hermiston bitumastic enamel and connected with Dresser couplings.

Actual construction was started April 23, 1938. The pipe was stored and assembled in a yard on the east side

of the lake, about one mile south of Skaneateles Village. Piles were driven on each side of, and parallel to, the proposed line of the intake at intervals of 150 feet. These were used to insure good line and grade for the pipe, as well as to anchor the excavating and laying equipment. Excavation was done with a dragline operated by a power-driven crane, which was supported on a steel structure fastened on each side to a 65 x 16-foot wooden barge. The pipe was lowered to proper position from a catamaran built on two bulkheaded 90-foot sections of the 55-inch intake pipe to maintain buoyance.

In laying the intake pipe, three 30-foot sections were joined together and bulkheaded at the pipe yard. These were towed to the catamaran and lowered into place by hand winches. The coupling of the joints under water was done by two divers. The total length of the underwater section of the new intake is 4,210 feet, and the depth below the average lake level is 21.5 feet. The total cost of the 1938 work, including the gate-house, was $150,000. All operations were performed by the forces of the Division of Water Supply, and all the equipment used is the property of that Division.

The new gate-house is a two-story limestone and brick structure with steel skeletons. The living quarters for the inspector, who is on 24-hour duty, are on the second floor. On the ground floor are housed the valves controlling the flow from both intakes and the flow through the conduits carrying water to the city distribution system, as well as the sterilizing apparatus and the gages indicating the rate of flow in the intakes and conduits and the flow through the Skaneateles Lake outlet.

Sterilization of the water is done with chlorine. In order to properly treat the water coming through the new intake, it was necessary to purchase an additional Wallace & Tiernan chlorinator to augment the two in current use. This was installed during the erection of the new gate-house. Two Bailey electric flow meters of the orifice type were installed this year to measure and record the quantity of water flowing through each of the conduits; a 30-inch meter in one conduit and a 42-inch meter in the other. The orifice plates are located north of the gate-house with the recording charts inside the gate-house. A well to afford access to the transmitters of the meters was constructed in conjunction with the installation.

Based on present consumption, the city of Syracuse now has a water supply capable of meeting its current needs in addition to allowing for an increase in use due to an increment in population or industry. The completion of the third conduit will further increase the daily flow of water available for the city.

Annual Awards to Healthy Cities

THE awards in the 1938 City Health Conservation Contest and the 1938 Rural Health Conservation Contest have been announced by the Chamber of Commerce of the United States in cooperation with the American Public Health Association. The winners in the Tenth Annual City Health Contest are:

GROUP 1.—Cities of over 500,000 population: Cleveland, Ohio, winner; awards of merit to Buffalo, N. Y., and Pittsburgh, Pa.

GROUP 2.—Cities of 250,000 to 500,000 population: Providence, R. I., winner; awards of merit to Memphis, Tenn., Louisville, Ky., Dallas, Texas, and Cincinnati, Ohio.

GROUP 3.—Cities of 100,000 to 250,000 population: Grand Rapids, Mich., winner; awards of merit to Reading, Pa., Yonkers, N. Y., and Erie, Pa.

GROUP 4.—Cities of 50,000 to 100,000 population: Newton, Mass., winner; awards of merit to Madison, Wis., and to Greensboro, N. C., and Evanston, Ill., tied.

GROUP 5.—Cities of 20,000 to 50,000 population: Plainfield, N. J., winner; awards of merit to Winona, Minn., Orange, N. J., and Stamford, Conn.

GROUP 6.—Cities of less than 20,000 population: Englewood, N. J., winner; awards of merit to Hibbing, Minn., and Virginia, Minn.

In addition, special awards were given to Baltimore, Md.; Brookline, Mass.; Detroit, Mich.; Greenwich, Conn.; Hackensack, N. J.; Hartford, Conn.; Newark, N. J.; New Haven, Conn.; Pasadena, Calif.; Schenectady, N. Y.; and Syracuse, N. Y. Each of these cities has on two or more occasions won first award in its population group and has maintained its previous high standard during 1938.

The awards in the Fifth Annual Rural Health Contest are made by divisions, as follows:

Northeastern Division.—Winner, Cattaraugus County, N. Y. Awards of merit to Mecosta-Osceola District, Mich.; District No. 7, Mich., and Saginaw County, Mich., tied; Alger-Schoolcraft District, Mich.; Cortland County, N. Y.; Chippewa County, Mich.; Barnstable County, Mass.; and Berkshire District, Mass.

Eastern Division.—Winner, Wicomico County, Md. Awards of merit to Fayette County, Ky.; Mason County, Ky.; Montgomery County, Md.; Jefferson County, Ky.; Scott County, Ky.; Arlington County, Va.; Anderson County, Ky.; Barren County, Ky.; Hamilton County, Tenn.; and Orange-Person-Chatham Health Unit, N. C.

Southeastern Division.—Winner, Charleston County, S. C. Awards of merit to Lauderdale County, Miss.; Brooks County, Ga.; Berkeley County, S. C.; Macon County, Ala.; and Pickens County, Ala.

North Central Division.—Award of merit to Gallatin County, Mont.

South Central Division.—Awards of merit to Dallas County, Texas; Tyler-Smith County, Texas; and St. Mary's Parish, La.

Western Division.—Winner, Los Angeles County, Calif. Awards of merit to Wasco County, Ore.; Clallam County, Wash.; Marion County, Ore.; Jackson County, Ore.; and Spokane County, Wash., and Whitman County, Wash., tied.

Special awards for having won the Rural Health Contest twice in their respective geographical districts and for having maintained their previous high standards of achievement during 1938 go to Davidson County, Tenn.; El Paso County, Texas; Pike County, Miss.; and Shawnee County, Kans.

The awards in the City and Rural Contests are not necessarily made to the healthiest communities, but rather on the basis of the effectiveness with which a community is meeting its health problems. Each city or county is appraised by a Grading Committee consisting of a group of carefully selected health experts from all parts of the country. Each community is appraised upon what measures it takes: (1) to provide and safeguard its water supply; (2) to furnish adequate and safe sewage disposal; (3) to reduce infant and maternal deaths; (4) to combat tuberculosis and syphilis; (5) to protect its citizens against other communicable diseases; (6) to insure healthy children; (7) to protest and safeguard its milk and other foods; (8) to promote effective cooperation with its physicians and dentists in furnishing necessary services to all those who need them; and (9) to enlarge and improve its lay-understanding of ways and means of preventing sickness and untimely death and of maintaining good health.

The City Health Contest is financed by a group of life insurance companies, and the Rural Health Contest is financed by the W. K. Kellogg Foundation of Battle Creek, Mich.

Market Improvements to Cut Costs

Practical Suggestions from Philadelphia, Kansas City, and Atlanta—Aid Available from Uncle Sam

By C. B. SHERMAN
U. S. Department of Agriculture

IT costs about one-and-a-half billion dollars to distribute a one-billion-dollar crop of fruits and vegetables, and considerably more than half of that huge cost is incurred after the produce reaches the large cities.

Why? Notably because most large markets are old, poorly planned, poorly placed, with obsolete equipment, narrow stores, single entrances, insufficient storage rooms, and, above all, with inadequate space everywhere. A recent survey of 101 wholesale markets in 40 cities, which handle about half of the fruit and vegetable crop of the country, showed that the chief problems are common to most of these markets. A discussion of the problems of one large market is likely to fit any large city in a general way.

LONG AND UNREGULATED HOURS MEAN THAT THE LABORERS SNATCH THEIR SLEEP WHEN AND AS THEY CAN

What are the results of these bad conditions? Congestion past words. Long delays in loading and unloading. Waste of laborers' and truck drivers' time as they wait for a chance to maneuver their trucks into a place where they can unload or load—perhaps far away from the store that is handling the goods. Undue amount of cartage by hand trucks, which means expense and loss of time. Undue handling of the produce, which hastens deterioration and spoilage. (Porterage costs in one city have reached two-thirds of a million dollars in one year.) Deplorably unsanitary conditions and consequent waste. Loss of time by those who come to buy. These conditions mean waste of all kinds and on all sides, and consequent high costs everywhere.

Indirect results may be even more disastrous to the city. Other markets may be started that are no better placed or planned, or that may be used by only one railroad or group. This increases investment and maintenance expense, increases the loss of time by merchants who must go to both markets to get supplies, increases the huge cartage bills and the deterioration of produce. Inducements to racketeering and other unethical practices are increased, and the effort to apply the city regulations must be doubled.

More important, perhaps, is the fact that the wholesale dealers in these markets are finding the costs of distribution through these channels so high that large quantities of produce are being moved around their markets directly to surrounding towns and cities. For several years they have found it difficult to compete with the newer channels of distribution. Hence, in some cities the volume handled in the wholesale markets has actually declined in the face of increased production and consumption; and when it remains the same, it often represents a smaller and smaller proportion of the total fruits and vegetables handled in the city.

United Effort Necessary to Advancement

What to do about it? Philadelphia is working on ways and means, although its markets are about as complex and puzzling as any. A few other cities are busy at improvement too—watch Kansas City and Atlanta. In each of these cases the plans are based on the results of that study of 40 cities plus a close study of conditions within its own trade area. These cities are getting cooperation. No one agency or group goes ahead without consideration of the other groups. Growers are given the same chance to take part as dealers and consumers, and all are now interested.

Philadelphia has done a particularly good job in bringing the different groups together. Plans now worked out would save from one to two million dollars each year in distribution costs in that city. These plans have been discussed with representatives of growers, the trade, the railroads, the consumers, and other groups. Newspapers and radio have taken part. Growers have established county committees, a state committee, and a regional committee to insist on improvements—for Philadelphia draws produce from several states. Dealers who handle three-fourths of the produce marketed there, and large groups of consumers, have agreed that they want action.

Finally, a joint committee has been formed composed of three growers, three members of the trade, and two consumers. Its duty is to coordinate the activities of the groups and help to concentrate on the selection of approved plans and the procedures to be used in putting the plan into operation. Then an agency must be established to work for the groups in actually promoting, building, leasing, and managing the necessary facilities. This is highly specialized work.

Kansas City is about to move its market to a new location that has been approved by disinterested and experienced

CONGESTION AT FANEUIL HALL MARKET, BOSTON, ON A WORK DAY

"CLEAR THAT FIRE-PLUG!" BUT WHERE ELSE CAN HE STACK HIS PRODUCE?

parties. There the market will find new layouts and buildings. Atlanta has now located, bought, and paid for a situation, satisfactory to all the groups involved, at a junction of three railroads, which is convenient to highways that come from all directions. Plans for the new market and equipment are now being drawn up with the advice of people who have specialized in such problems.

SAN FRANCISCO HAS THE SAME KIND OF CONGESTION THAT IS FOUND IN EASTERN MARKETS

Some Pitfalls to Avoid

What are some of the pitfalls for planners to avoid? Unfortunately, they are illustrated in many new market places. Many of them are evident. Buildings that are too expensive through uninformed planning or mismanagement. Elaborate unneeded office space at the expense of farmer-dealer shelter. Architectural frills and impracticability. Markets without direct rail connection to the sales floors. Incomplete plants—although often expensive—that are not properly arranged for handling rail, truck, and boat receipts, or that can't or won't accommodate all kinds of farmers and dealers, or that lack the requisite space, especially for the movement of trucks, for loading and unloading, for parking.

Disinterested Guidance Available

In order that any large community that wants it may have disinterested guidance based on study and experience in many large cities, the U. S. Department of Agriculture is now supplying an advisor if requested, provided the Department is convinced that the community is ready for effective debate and action. The advisor's continued participation depends upon the progress made and the willingness of the groups to follow plans that the Department believes will make for success. He cannot lose time in prolonged contentions between local interests that will not concede narrow advantages for the sake of ultimate general improvement, but he will give reasonable aid in bringing the groups together on effective plans.

Although the Department of Agriculture is not in a position to work direct with smaller cities where the markets are strictly intrastate, its specialists are working with state marketing agencies in such a way that, when requests come from these smaller cities for advice or aid, it can refer the request to the state agency, with the assurance that the state officials will have ready access to the same materials and assistance that are available to the large cities.

Producing Areas Also Considered

Paralleling the work in city markets, another disinterested marketing program is making progress in a large producing area. State and Federal marketing research specialists have studied together the regional situation in the Southeast. Soon they will have determined the number of wholesale concentration markets needed for assembling fruits and vegetables, and the best cities for their location. The layout, equipment, and type of operation needed in each case will be studied next.

Thus the acute need of cutting the costs and increasing the efficiency of marketing and management are being vigorously attacked in both the producing country and the consuming cities. Methods and plans are being fitted to the circumstances in each case.

If Your Community Has Less Than 10,000 Population

Have you installed any recent public works projects or improved methods of municipal administration that you believe would be of interest to officials or engineers in other small municipalities? If so, please send us a brief descriptive item, and let us know whether photographs or other illustrations are available if we could use them.

THE AMERICAN CITY wishes to devote more space in future to interesting activities in small places. The cooperation of readers in making available such material will be appreciated.

Sewage Sludge and Screenings—Their Disposal by Incineration

Proper Consideration Must Be Given to All Factors in Choosing Method

By CHARLES A. EMERSON
George B. Gascoigne & Associates, New York City

WHAT are the problems facing the designing engineer and the municipal officials when the incineration of sewage sludge and screenings is under consideration as the method of disposal to be adopted for a new sewage-treatment plant or for the improvement of conditions at an existing plant? Of the many questions that are ordinarily asked, three are particularly pertinent—

Reliability

QUESTION 1

Has incineration been developed to the stage where it can be accepted as a reliable method for the destruction of sewage sludge, without production of offensive odors, objectionable smoke or fly ash?

Considered from the standpoint of larger installations, say those for municipalities having populations of 25,000 or more, and assuming adequate attendance and proper preparation of the sludge, the answer would generally be in the affirmative. Recent reports from some fifteen installations now in operation indicate that practically all of them are rendering satisfactory service and that such deficiencies as have developed can be remedied by moderate rebuilding operations, referring either to the incinerator or to the equipment for conditioning the sludge.

Conservation

QUESTION 2

Is a municipality justified in adopting a method of sludge disposal which does away with the possibility of utilization of sewage sludge as a fertilizer?

A general answer to this question is hardly possible. Some cities have succeeded in developing substantial returns from the sale of sewage sludge, which has materially reduced the cost of sludge disposal. The fertilizing value of most types of sewage sludge is relatively low and the proportions of available nitrogen, phosphates and potashes do not correspond with the accepted ratios of these constituents in the best commercial fertilizers. By and large, the returns from the sale of sewage sludge throughout the country during the past years have been surprisingly small, excepting in the case of a comparatively few municipalities where large investments have been made for drying and preparing the sludge for market.

A recent compilation by the United States Public Health Service indicates that there are some 3,700 sewage-treatment plants in operation or under construction in the United States, to serve a total population of about 37,500,000. Assuming an average contribution of 90 pounds of dry solids per year per capita, the average removal of these solids from the sewage, and a nitrogen content of 2 per cent, the total nitrogen recoverable would amount to approximately 11,500 tons a year, or only about 4 per cent of the nitrogen content of commercial fertilizers sold in the United States each year. Bearing in mind that a large proportion of treatment plants serve the smaller municipalities where investment in plants for the manufacture of commercial fertilizers would not be justified, it would seem that the waste of our natural resources because of a failure to utilize the fertilizer value of sewage sludge is not as alarming a matter as some conservationists fear.

It is believed that the true answer to this question does not rest upon financial considerations alone, but rather upon whether any other method of sludge disposal would give as good or better results throughout the entire year from the standpoint of dependability, elasticity, freedom from nuisance, and over-all costs. In many instances the answer to this question can be given only after a careful study has been made of the conditions existing in that particular locality.

Selection

QUESTION 3

If decision has been reached to adopt incineration as the method for sludge disposal, what is the best method for selecting the make and type of incinerator?

The procedure adopted in the majority of recent installations, which permits selection of the incinerator upon a guaranteed performance basis, is the proper one. After careful study of local needs, specifications are prepared setting forth definite conditions to be met, such as desired capacity, contemplated duration of incinerator runs, moisture content, thermal value and similar characteristics of the prepared sludge, kind and cost of auxiliary fuel to be used, cost of general maintenance and repairs, quality of performance to be obtained, and classes of materials to be used in the installation. These specifications are put out for competitive bidding with proper restriction as to experience, financial responsibility and other reasonable requirements for prospective bidders. The bids are tabulated and evaluated, using the factors set forth above, and selection is made on the basis of economy of operation under conditions which are expected to be found at the plant. Upon completion of construction, the installation is subjected to prescribed performance and service tests.

The foregoing method seems to reduce uncertainties to a minimum and to be as fair to the incinerator manufacturer as it is to the designing engineer and the owner.

Careful Planning and Operation Are Essential

One other observation seems important. Sludge incineration has not yet reached the state of perfection where it can be adopted by any rule-of-thumb method. A successful installation can be obtained only as a result of careful planning. The sludge applied to the conditioning and dewatering devices preceding the incinerator varies from day to day as to both quality and quantity. Both of these factors are susceptible to a certain degree of control, but it is not possible to keep them entirely constant, for the treatment plant must receive the sewage as it is produced in the municipality and delivered by the main sewer. It is apparent, therefore, that the performance of the incinerator is materially determined by the performance of all the units of the treatment plant involved in the separation of sludge from the incoming sewage and in the preparatory treatment of the sludge prior to its delivery to the incinerator proper.

—From a discussion presented before a meeting of the Sanitation Group, American Society of Mechanical Engineers, New York City.

Clamshell Cleans Catch-Basins

Winnetka, Ill., Saves 25 Per Cent of Hand-Cleaning Costs with New Device

IN November, 1938, the village of Winnetka put into service a power-driven hoist and clamshell bucket rig for cleaning catch-basins, replacing hand cleaning, which had been used previously. The results to date have been very satisfactory and will undoubtedly be of interest to other small cities where the cost of more elaborate equipment cannot be justified. On the basis of the first three months of use in this community of 13,000 population, a saving of about 25 per cent of the cost of hand cleaning has been effected, and the work has been done more satisfactorily and in a more sanitary manner. As the crew becomes more familiar with the equipment and some refinements are added, it is expected that this cost differential will be improved.

The catch-basin cleaning unit consists of a clamshell bucket handled by a two-drum hoist and derrick built into a steel frame unit which is mounted on top of the forward end of the box of a 2-ton dump-truck. The whole unit may be mounted or dismounted in about fifteen minutes, leaving the truck available for general duty. The outfit was conceived, designed and constructed by Robert L. Anderson, Superintendent of Public Works, and W. H. Davis, Garage Foreman of the village, at a total cost of $467.96, of which $403.26 was for labor in construction. The cost of the engine, which would be about $40, is not included, since one was used from another piece of equipment.

The bucket is of 1-cubic-foot capacity, water level, built of 10-gage steel, with a single arm for each half shell. The dimensions were figured to permit access through either rectangular or round covers when closed, and full

DETAILS OF THE CLAMSHELL CATCH-BASIN CLEANING MACHINE DEVELOPED BY THE VILLAGE OF WINNETKA

opening inside a 3-foot-diameter basin. Curved guides are provided at each corner to help in bringing it out of a basin without catching on projections.

The derrick is constructed of 2-inch pipe and is swung horizontally by hand. A hand adjustment for raising the boom is also provided. The two cables are run up through the vertical leg to take up the twist caused by the horizontal swing. Power is applied to the winch through a V-belt drive to a shaft carrying a foot-operated clutch and the worm of a worm-and-pinion set. These operate in oil inside an enclosed gear-box, the pinion being mounted on the drum-shaft. The drums are driven by normally engaged friction clutches, which may be released by hand controls to lower the bucket. All braking is provided through these clutches and the drum-shaft, which is prevented from reversing by a small ratchet attachment inside the gear-box. The engine now in use is a 1.2-hp Briggs & Stratton, which operates for a full day on one gallon of gasoline.

In the construction of the drainage system in Winnetka, no thought had been given to the use of machinery in cleaning, and consequently it was found that about 10 per cent of the catch-basins must be cleaned by hand because of structural features which prevent the entrance of the bucket. The most usual difficulties are offset covers, pipes running through the basins, and restricted necks, the last of which can be remedied fairly easily.

It is the practice in Winnetka to clean all basins once a year. The basins average a little less than ½-yard of material, and about 20 basins are cleaned per day, requiring the hauling away and disposal of about 9 cubic yards of material daily.

The operating crew for cleaning consists of two men—a hoist operator and a ground man. The duties of the former are obvious. The ground man removes the cover and guides the bucket into and out of the basin. He is provided with a long-handled spade with which he occasionally pulls the material sticking to the walls to the center for easy loading. This is usually necessary only in dry material. If desired, the bucket will clean up the floor of the basin down to the last shovelful, but ordinarily it is not worth the time to gather up the last cubic foot of material. A number of holes were burned through the bucket shell to facilitate drainage of wet material.

Costs

In the village accounting system at Winnetka, equipment rentals, which include all operating and maintenance expenses, but no capital depreciation, are charged against all operations. Under this arrangement the truck rental is 25 cents per hour, and the cleaning machine 10 cents per hour. With a labor scale of 75 cents per hour for the operator and 60 cents per hour for the helper, the total cost is $1.70 per hour. On a basis of 20 basins and 9 cubic yards per day, this makes the unit cost 68 cents per basin, or $1.51 per cubic yard of material removed from the catch-basins.

For a Sound and Economical System of Title Assurance

Torrens Title Certificates Gain Increasing Recognition

URGING both home owners and lending institutions to give their support to State Senator Desmond's bill to implement the Torrens Law in New York State, C. Harry Minners, President of the Bankers Federal Savings and Loan Association, declares that universal application of state certified titles would go far in reducing the cost of mortgage placements and save property owners and mortgage investors substantial sums that now go in title insurance. Mr. Minners made this statement in announcing that his institution will recognize Torrens Title Certificates and will make mortgage loans on such properties.

"The recent failure of the New Jersey Title Guarantee Trust Company left many mortgage holders with thousands of dollars of worthless title insurance policies on their hands," Mr. Minners pointed out. "Although depositors in that institution were protected by Federal Deposit Insurance, the title insurance policies on approximately 30,000 realty holdings had nothing back of them but the guarantee of the defunct company.

"This experience is just one more lesson added to the long list we had during the depression to demonstrate the need for a sound system of state title assurance. George L. Bliss, President of the Federal Home Loan Bank of New York, has pointed out that the biggest item of cost in the placing of a mortgage loan is the expense of title examination. The Home Owner's Loan Corporation has found that in states where the Torrens title system is in operation, the cost of proving clear title is approximately half of that prevailing in New York State.

"The Torrens system boils down simply to the transfer of title to real estate by certificates. Instead of requiring expensive and often repeated searches through a maze of records dumped into Registers' offices, the Torrens system calls for the ledger plan with the entire history of each individual parcel on its own ledger page. A copy of that page up to date becomes the certificate, available at the nominal fee of $5."

Emphasizing the need for making the Torrens system of registering real estate titles more easily available to the general public and eventually compulsory, *Municipal Reference Library Notes*, of the New York Public Library, in its issue of April 19, says in part:

"Sir Robert Richard Torrens of Australia, who first conceived the idea and had it enacted in 1858, based it on ship registry. As in real estate, one or more unrecorded liens on a ship could cause a great deal of confusion and delay. The Torrens system is a simple ledger record describing property in detail, the ownership and all its legal encumbrances as of a given date. Any change of title is immediately recorded by registration, for a small fee, by adding the new name. The initial correct information is recorded only after proceedings and research by official examiners have produced all available information. As protection against errors or possible claims, the model law should include an assurance fund, collected at registration by assessing a small per cent of valuation. The fee for the whole process is considerably less than private title-searching, running to approximately $40 on $5,000 of property in New York State.

" . . . . Three important studies have just come from the New York County Register's office. Miss Martha Byrne, with the aid of a WPA project, attempts to answer two pamphlets which criticized the Torrens law. Her refutation is replete with court citations and statistics not only of the state, but wherever the land title registration law is employed. The third pamphlet is on the existing laws—"Comparative Digest of the Torrens System in the United States or Possessions." In 129 mimeograph pages, the fifteen state laws are given in some detail. This completes a trilogy which is really a history of title registration, not biased—because it presents both sides, and hopes for an ultimate solution to a time-worn difficulty."

A Mountain Park Operated as a Municipal Enterprise

Low Rentals from Leases Provide Ample Funds—Modern Facilities—No Taxation

By H. BRONSON COWAN
Peterboro, Ontario

THE possibilities of a municipality owning land used for residential purposes, and obtaining all revenue necessary for its development and maintenance through leases, have been demonstrated on a small scale but in an interesting manner by the city and municipality (township) of Chilliwack, British Columbia. These two municipalities control and operate the summer resort of Cultus Lake, situated in a mountainous section seventy miles east of the city of Vancouver, and eight miles south of the city of Chilliwack.

The Cultus Lake resort comprises approximately 300 acres, with a mile frontage on Cultus Lake. The lake is 2¾ miles long and averages about a mile in width. Some twenty years ago the property had not been improved for residential purposes. It was government land, beautifully situated and with many natural advantages, but little effort had been made to develop the possibilities of the area as a summer resort. A good road, beaches, wharves and other improvements were needed. As an increasing number of people were using the property and desired to erect cottages, the Councils of the municipality and city of Chilliwack decided to obtain joint control of the property.

Park Administered by a Board

The Park was established in 1924 by a special provincial statute, "The Cultus Lake Park Act." Under authority given by this Act, the Cultus Lake Park Board was elected to administer the property. The Board consists of five members, three of whom are elected by the municipality of Chilliwack and two by the city of Chilliwack, each serving a two-year term. The Board appoints its own Chairman each year. The present Chairman is C. M. Pearson, of Sardis, B. C.

Members of the Board must have the same qualifications as councilors. Only those leaseholders who are entitled to vote in a municipal or city election can vote for members of the Park Board. This restriction was necessary because

A SECTION OF CULTUS LAKE, A MUNICIPAL SUMMER RESORT FOR CHILLIWACK, BRITISH COLUMBIA

at the beginning of its operations the Park Board had to sell bonds to develop the area. The bonds were guaranteed by the municipality and city of Chilliwack and, therefore, indirectly by the taxpayers. While the Board has set aside ample funds to retire the bonds, the bondholders prefer to take their dividends, and refuse to have them redeemed before maturity. There is a possibility that when the city and municipality of Chilliwack have been relieved of their guarantees, the responsibility for the administration of the park may be given to the leaseholders. So far there has been no controversy on this point. Those having an interest in the park, but not entitled to vote, may present their opinions or suggestions to the Board.

Leasehold System Adopted

The Board decided that park land would be leased to would-be residents. Part of the area was subdivided into lots of varying sizes. These lots are leased for annual rentals ranging from $14 to $25 a year. The funds thus derived, together with auto park fees, charges for a lighting service and concessions, constitute the entire revenue of the Park Board. There is no actual taxation. No contributions are received from either the city or the municipality. With the revenues mentioned, the park is self-sustaining.

The number of residents in the park has increased until there are approximately 260 cottages. About 40 families live there permanently. Leases are granted for only one year, but they may be automatically renewed from year to year on payment of the annual rental by April 15. Failure to pay rental on the due date involves the cancelation of the lease. The leaseholder then is given sixty days in which to pay, with a penalty, in order to reinstate the lease. If payment is not made, the Park Board takes possession of the property. The Board has reserved the right to refuse to renew a lease. In such a case payment is made to cover improvements effected upon the property. The amount of payment is decided by mutual agreement or arbitration.

Numerous Improvements Made

The revenue of the Park Board the first year of its operation was about $5,000. It has increased until it is about $10,000 a year. The funds of the Board have been used for the following purposes. An electric light distributing system has been established at a cost of $5,000. A water-supply system has been installed. Water from a mountain stream is piped onto each lot, the cost of which, including service, is included in the rent. A sanitary system has been established and fire protection provided. The park area and roads have been improved, auto park facilities have been established and concession buildings erected.

As this type of resort was unique in Canada, it was necessary for the Board to decide upon its own methods of development and regulations during the first few years of the park's operation. From the start it has been self-supporting and a financial success. It now is well established. The Board is without borrowing powers. Expenditures each year have been restricted to the revenue available. If money should be required for a major development, it would have to be obtained, as at first, by way of debentures issued by the municipality and the city. This was done in connection with the water and sanitary systems. Debentures for $12,000 were issued for a ten-year period. Provision was made that the sinking-fund and interest, amounting to $1,600 annually, should be paid entirely out of park revenue. These requirements have been met. The property account and capital fund balance sheet shows assets of $13,323.61.

The Board's Financial Statement

The financial statement of the Cultus Lake Park Board for the year 1937 showed total receipts of $10,764.77. The principal receipt was $5,338.00 from rentals. Lighting accounts brought in $2,355.00. Auto park fees were $725.00 and concessions $600.00. Miscellaneous receipts completed the total mentioned.

The principal expenditures were as follows: parkkeepers, $1,964.00; clearing and grading, $1,157.00; sinking-fund and interest, $1,668.00; power account, $1,166.68; general maintenance, $739.32; life-guard and first aid, $266.25; auto park assistant, $156.00; road work and oil, $167.00. The total expenditures were $10,447.93. This left a balance on hand (including $316.84 carried over from the previous year) of $659.42.

The exercise of good judgment by the members of the Park Board has resulted in the development of the park almost on model lines. Leaseholders have been provided with every convenience, in the form of roads, wharves, swimming beaches and other similar facilities, that could reasonably be expected in a summer park of this character. The cost to the leaseholders, aside from their own investment in their cottages, has been so small as to be negligible. The leaseholders, as well as the ratepayers of the city and municipality of Chilliwack, have reason to be gratified—as they are—over this successful municipal venture in the operation of a public park area.

Conference Planned on Government and the Citizen

THE Citizens' Conference on Government Management will be held at Estes Park, Colorado, from Monday, June 19, to Friday, June 23, 1939. It is sponsored by the Department of Government Management of the University of Denver School of Commerce, and the Sloan Foundation. The purposes of the Conference are to afford opportunity for discussion between the citizenry and public officials in government administration; to strengthen citizen interest in the processes of government; to examine the problems of organization of citizen groups interested in raising the standards of governmental performance, especially in local government; and to provide the background information on the services of government which will enable the citizen to participate more effectively in improvement programs.

The general theme of the discussion will be: The Role of Government in the Social-Economic Life of the Citizen. Some of the topics to be discussed will be: Repercussion of Government Expenditures on the National Wealth and Income; The Impact of the Social Security Program on Our Economic System; Federal Relief—Emergency, Expedient, or Permanent Program?; Government Efficiency and the Popular Will; and How Can Government Best Serve in Expediting Economic Recovery? The Round Table talks will include discussions on the following: Where Government Obtains and Spends Its Revenues; Financial Management and Control of Local Government; Organizing Government for Effective Administration; Government in the Business of Social Security and Relief; and Citizen Groups in Government.

Good Swimming in Sherman, Texas

Modern Underwater and Overhead Lighting and Complete Sanitary and Recreational Equipment Are Features of This City Pool

By W. MORGAN WORKS
City Manager

SANITARY, ultra-modern and long-needed is the 165 x 60-foot municipal swimming pool opened in July, 1938, in Houston Park, Sherman, 16,000 population. The brick-stuccoed building is 101 x 44 feet in plan with an open bandstand under a tile roof on the second floor.

Entrance to the pool is by way of electric eyes leading through showers and antiseptic footbaths, to eight ladders, three diving boards, and into the water—which is recirculated.

The equipment room under the bath-house contains an ammoniator; a chlorinator; three filters of sand, gravel, alum; an alum pot; a hair catcher; pumps; and a hot-water heater.

The pool contains 23 1,000-watt underwater lights and 14 overhead floodlights, and is arranged for A.A.U. meets, the floor of the pool being divided by black lines into regulation swimming lanes. Another novel feature is a sub-drained sand beach adjoining the pool, with entrances through one-way turnstiles. Bathers returning to the pool must go under a shower that washes off all sand.

AT RIGHT—THE ATTRACTIVE BATH-HOUSE THAT SERVES THE SWIMMING POOL (SHOWN BELOW) IN A CITY PARK IN SHERMAN

Just outside the deep end of the pool and within the fence is an ornamental electrical fountain with changing lights and colors. The pool and bath-house are located in a 10-acre park, the pool in a natural depression among native oak and elm trees, and the bath-house on a terrace with broad concrete steps leading from the bath-house to the pool. The park is one of twelve in the city and is only three blocks from the Municipal Building and Community Center, in the middle of a four-acre block and adjoining another

city park containing floodlighted tennis courts, ball fields, and archery ranges.

The swimming pool is entirely surrounded by a 7-foot Cyclone fence. The water is kept crystal-clear by filtration and treatment and is tested twice daily. The bath-house contains 360 steel lockers in addition to sufficient baskets for overflow crowds. Electric hair-dryers, plate-glass mirrors and sanitary drinking fountains are included in the equipment. There are two wading pools for children adjacent to the pool, but outside the fence. During the swimming season, band concerts are given by the municipal band in the band-shell on the roof of the bath-house.

PRINCIPAL EQUIPMENT

Recirculation pumps—The American Well Works, Aurora, Ill.
Photo-electric equipment—G-M Laboratories, Chicago, Ill.
Flood lamps—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Underwater lights—Westinghouse Electric & Mfg. Co.
Electric hair-dryers—Chicago Hardware Foundry Co., Chicago
Filters—Roberts Filter Mfg. Co., Darby, Pa.
Steel lockers—Berger Manufacturing Co., Canton, Ohio
Colored fountains—Westinghouse Electric & Mfg. Co.
Chlorinator and ammoniator—Wallace & Tiernan Co., Inc., N. J.
Vacuum cleaners—United Electric Co., Canton, Ohio

Fire Fighters Should Study Local Building Codes

POINTING out that knowledge of safe construction should be one of the essentials of a fireman's training, the National Board of Fire Underwriters, in its Bulletin No. 75, issued April 3, 1939, urges that every fireman make a thorough study of the building code in use in his city. "If," says the Committee on Fire Prevention and Engineering Standards, which prepared the Bulletin, "this code is deficient in its restrictions or requirements applying to the various features outlined above which tend to permit spread of fire or quick destruction of large values in structures or their contents, then an important part of the department's campaign of fire prevention and better fire protection should be for the suitable amendment of the code." Other excerpts from the Bulletin follow:

"Fire losses are of three general characters: destruction of the building; damage to the contents; and injury to the occupants.

"It is not practical to erect structures which are not susceptible to some damage by fire. Modern building construction has evolved fire-resistive buildings as we know them today, but experience in the conflagration in Baltimore and in many individual building fires has been that even these buildings can sustain losses of over 50 per cent of their value, and severe damage to contents and loss of life also take place.

"To reduce or minimize these serious losses and injuries, which statistics show are occasioned by less than one per cent of the fires, those who are interested in fire prevention must analyze the factors which contributed to or caused them.

"A general study of building fires shows several outstanding factors which not only in themselves increase the probability of losses because of the inherent conditions, but also prevent effective fire fighting. These features of building construction are excessive areas, open stairways, thin walls, improper ventilation systems, interior courts, unprotected windows, inaccessible basements and subbasements, lack of fire-doors, steelwork without insulation, weak floors and structural members which will not withstand sustained fire without failure, and the presence of various inaccessible places in which fire can extend vertically and horizontally without discovery.

"Correction of these principal factors responsible for fire losses and injury is the object to be aimed at by building codes. It is for that reason that every community should enact and enforce such a code. The argument sometimes advanced that the adoption of a building code increases cost of construction cannot be denied. It is one of the axioms applying to all forms of safety that the lessening of any hazard costs money or effort or both. As against this is the fact that few people object to this cost when the value of the results obtained are fully realized. . . .

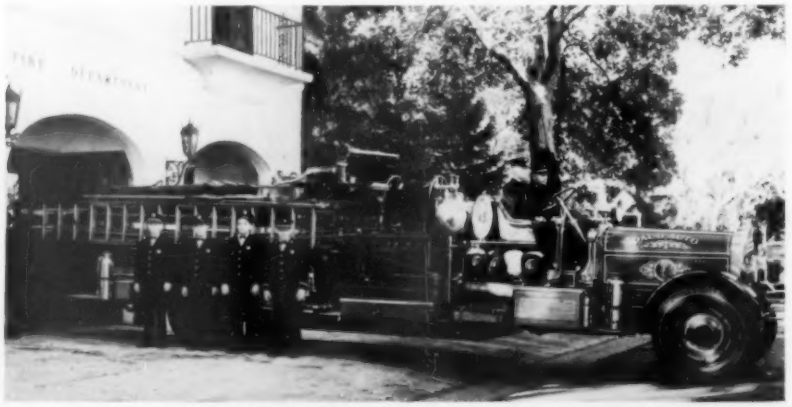
"One of the principal reasons fire-safe building construction is not commonly obtained—and any student of conditions in American cities will recognize that this is the case—is that design and construction follow practices handed down from one generation to another. To overcome this practice, a definite educational campaign is necessary. It is in this campaign that fire departments must take a leading part."

Fighting Fire with Fog

PALO ALTO'S fire losses have varied from 16 cents in 1933-34 and 20 cents in 1934-35 to $3.06 in 1931-32 and $3.07 in 1936-37. While the figures may have no scientific significance, it may be interesting to note the gallons of water we have used per dollar of fire losses during the last five years: since 1933-34, 10.2, 2.3, 1.7; and 1.5 gallons in 1937-38. During this entire five-year period, we also used a total of 135 gallons of chemicals, 35 gallons of foam, 71 quarts of Pyrene, and 33 pounds of CO_2. We use fog nozzles wherever possible, and all our apparatus is equipped with them.

Headquarters contains the Gamewell fire-alarm of 8 circuits and 88 boxes, and houses a Seagrave 750-gallon triple combination pumper with 80-gallon booster tank, and a city service ladder truck carrying a 1,200-gallon McGregor monitor nozzle, a 40-gallon nitrogen-gas pressure water tank, Griswold Fog-nozzles, McCaa oxygen masks, H-H inhalators, salvage covers, a stretcher, and a Homelite system consisting of a gasoline-electric generator, a 250-watt searchlight and two 500-watt floodlights. Station No. 2 has a 750-gallon pumper with equipment similar to the headquarters pumper, and a Chevrolet tank wagon of 320 gallons capacity.

The fog-nozzle carried on the ladder truck is on a 6-foot applicator with shut-off, for fighting fires in attic and cellar or in any closed place or smoke-filled or hot place where entrance is impossible. The nozzle is ½-inch in diameter. The tank truck carries a 6-foot applicator with 1-inch Fognozl for fires in residences, garages and paint booths, and for rubbish, oil and gasoline fires. The two pumping engines are equipped with Type 3-A Fognzls for extinguishing fires, and diluting poisonous vapors and gases in front of firemen, and for protection from heat. Where arson is suspected, a fog nozzle can extinguish the fire without disturbing the evidence which otherwise would have been destroyed by the force of the straight stream.



CITY SERVICE LADDER TRUCK OF THE PALO ALTO FIRE DEPARTMENT

WILLIAM CLEMO,
Fire Chief, Palo Alto, Calif.

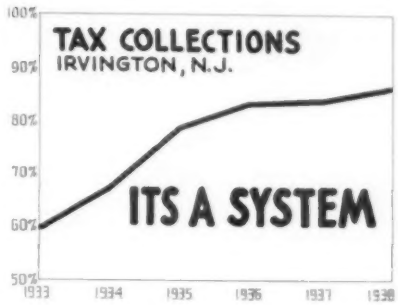
If your community has less than 10,000 population,

please see bottom of page 49 of this issue.

Program for Back-Tax Collection

By HERBERT KRUITTSCHNITT
Mayor, Irvington, N. J.

BEING informed that "little or no help could be expected from Trenton this year in the way of tax relief," the tax officials of eleven cities in Essex County, N. J., met and voted, on March 21, 1939, to pursue a uniform program for collecting delinquent personal taxes. It had become an old custom of a number of communities to write off past years' personal-tax delinquencies, while waiting hopefully for their citizens to come in and pay over the counter the current taxes. Lean times, however, became leaner, while an increasing volume of municipal improvements cried louder for action.



Hence the meeting, at which our own tax collector, Edward A. Poppele, was most active, because not only has Irvington a system which causes solvent real-estate delinquents to pay, but it is this Irvington system which these cities adopted. This is the procedure for collecting personal tax arrears:

1. Have field cards made showing all outstanding personal delinquent accounts, to be used by arrears department.

2. For quick identification, these cards to be classified separately: (a) white card for household accounts; (b) buff or colored card for business accounts.

3. These cards to be turned over to arrears collector and a systematic effort made to collect these taxes as follows:

a. Business accounts to be dealt with first.

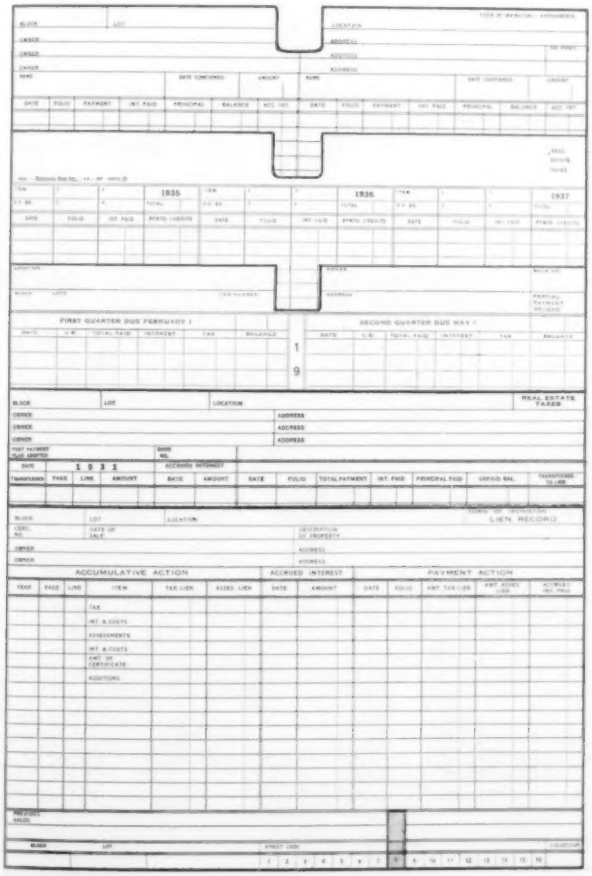
b. Followed by a thorough canvass of household accounts.

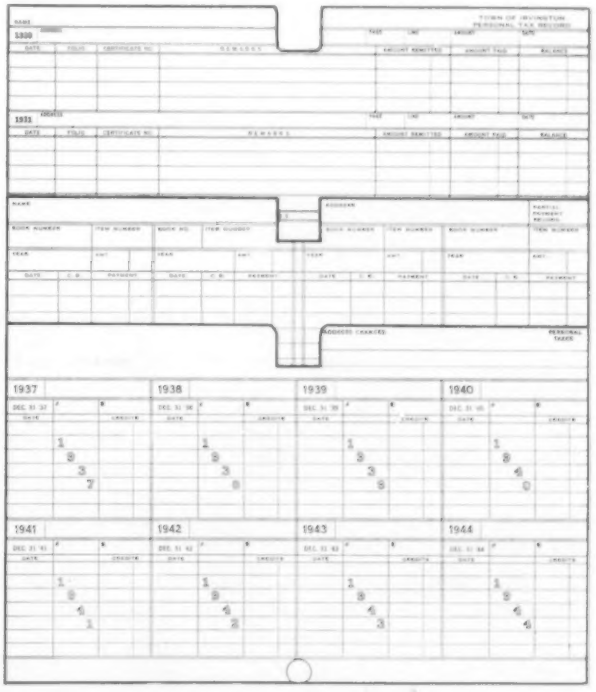
4. If report of collector shows an apathetic reaction of the delinquent taxpayer, a tax warrant to be issued at once with an allowance of ten days grace for an answer.

5. If at the end of ten days no payments have been received or an answer to tax warrant, a levy and distraint to be attached against chattels and fixtures. Recommended a five-day period for an answer to this levy.

6. If at the end of five days no answer has been received by tax office, a notice of sale of chattels distrained for taxes to be posted according to law.

7. At the end of five days, sale to be held and goods sold to satisfy taxes owned to town.





THESE EIGHT KARDEX CARDS CARRY DATA OF ALL TAXES IN ARREARS, AND COLORED SIGNALS ATTACHED TO CARDS GIVE SPECIAL INFORMATION

The five cards at left, shown placed one behind another as in a visible file, cover assessments, real-estate taxes, and liens, and two over-writing sheets consisting of a yearly work sheet broken down into quarters, which in turn is posted to a second over-writing sheet which is a four-year record. The three cards *above* are the personal tax records

The procedure set forth in 4, 5, 6 and 7 is followed to the letter on delinquent business accounts only. A slight variation must be practiced on household accounts, to wit:

If the collector's report shows an apathetic delinquent taxpayer, a tax warrant is issued at once with a 30-day grace. When the entire town has been canvassed for household accounts, all tax warrants which have been ignored are listed, and the names published in the newspaper. If after this, there are accounts still ignored, the sales of household goods or imprisonment of delinquent taxpayer is determined by either the tax collector or the Town Commissioners. This action is in accordance with Revised Statutes of New Jersey of 1937, Section 54:4-78 and 54:4-79.

This procedure can be used successfully only if *all* delinquents are taken under consideration. This is done in Irvington with two systems of visible Kardex files, one for real estate and the other for personal tax cards, each carrying eight years' data, as illustrated on page 57. Of our 21,000 personal accounts, 10,000 are in the delinquent file; of the 9,500 real-estate accounts, 1,900 are in the delinquent file. These two files are on permanent records.

Prior to the installation of this file, the records were maintained in several places and consisted of a Lien Record, a Record of Payment of Taxes, a Record of Assessments, and a geographical Record of Delinquent Taxes. Kardex was installed because it brought together in one place complete, up-to-date tax information on every account. These records are extremely important, particularly in view of the fact that they serve the public for the purpose of tax search, and a complete tax search is made quickly and accurately with this type of visible equipment. Copies of arrears cards are given to our five collectors. There is a blue field card for real-estate delinquency, and for personal delinquencies there are two field cards—(1) business, (2) household.

Arrears Reduced 53 Per Cent

Before this system went into effect at Irvington, unpaid taxes, assessments, assessment liens, and tax-title liens totaled $2,381,957. At the close of succeeding years, the totals have been as follows: 1934, $2,381,000; 1935, $1,620,000; 1936, $1,302,000; 1937, $1,140,000; 1938, $1,118,129.

For these years collections as per cent of the levy have been as follows: 1933, 57%; 1934, 64%; 1935, 75%; 1936, 79%; 1937, 80%; 1938, 82%.

Irvington was the first New Jersey city to go on a cash basis. This status requires us to maintain a cash reserve sufficient to make up the year's unpaid taxes. The importance of higher collections is illustrated by the amount of this reserve: $1,027,266 in 1935 with 75% collections, and $541,740 in 1938 with 82% collections. The reason why delinquent personal taxes are being scrutinized is the fact that while real-estate tax arrears have decreased 26% since 1935, personalty arrears have increased 1½%.

Zoning for Rational Land Use in Rural Counties

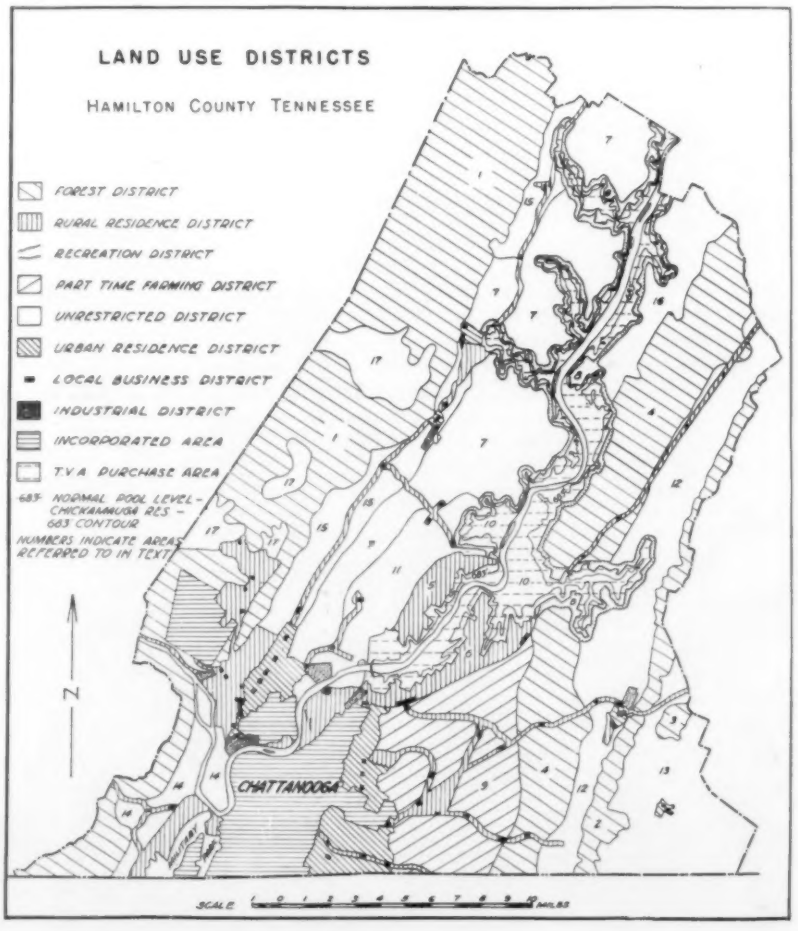
THE accompanying map, showing how a Tennessee county might be divided into areas having fairly homogeneous land-use problems, is from a 1939 report prepared by the U. S. Bureau of Agricultural Economics in cooperation with the Tennessee Valley Authority, the Tennessee State Planning Commission and the Hamilton County Regional Planning Commission.

As stated in the Summary of the report:

"Rural zoning is a device for giving organized and effective community support to locally developed land-use plans—for giving legal effect to such plans. It seeks, in the interest of the general welfare of the community, to encourage desirable uses of land through restricting or prohibiting undesirable uses.

"Land-use restrictions embodied in rural-zoning ordinances are adopted in a democratic way; they do not apply to already established uses, but only to new uses that arise after the adoption of an ordinance. Adjustments are provided for in cases where restrictions work undue hardships on individuals, and zoning ordinances are subject to change in accordance with changing conditions. . . .

"Rural zoning is not suggested as a simple solution for land-use problems in Hamilton County. The adoption of rural-zoning ordinances to prevent repetition of some of the most obvious past mistakes in land utilization and to encourage development of land for those uses that appear to be in the best long-time interest of both the individual and the community, should lead to consideration of additional lines of action for hastening desirable changes in land use and occupancy."



Using By-Product Power at Sewage-Treatment Plants

The Application of Sewage Sludge Gas Engines in Municipal Plants

By E. D. WEST
Sales Manager, Climax Engineering Co., Chicago, Ill.

WHEN we take into consideration that in a modern sewage-disposal plant there can be provided an average yield of 1 cubic foot of sludge digester gas per day per person, and that this gas can produce 1 hp-hr for each 17 persons, we begin to realize the enormous amount of power that can be developed from this by-product fuel. Expressed a little differently, a plant serving a city of 50,000 persons creates a potential of over 2,900 hp-hrs each day.

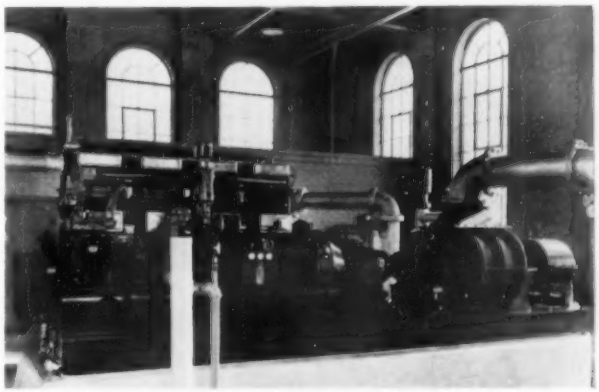
This discussion is confined to engines of 125 hp and smaller, which are used in most plants for cities of 10,000 population or over. If we were writing specifications for a sewage-gas engine installation we should require the following qualifications: (1) dependability; (2) flexibility; (3) economy.

Dependability

Dependability is rated first for the reason that a disposal plant operates 24 hours per day. Interruptions are annoying, expensive and at times dangerous. Therefore, only engines built and rated for this class of service should be acceptable. There are safeguards which can be added to otherwise good engines to further increase dependability and assure continuous operation. In every plant that has come under my observation there have been times when the gas supply has been interrupted. Recognizing this and also knowing that new plants must operate for several weeks before there is any sewage gas available, we recommend that sewage-gas engines be equipped to operate on a standby fuel. This may be gasoline, city gas, natural gas or butane, depending upon local conditions, that is, cost and availability.

Standby Units

Usually, complete standby units are installed. Frequently the standby is an electric-motor-driven unit. Our judgment is that in most instances the standby should be a duplicate of the gas-engine unit. This permits alternating the two engine-driven units, provides for equal service from both complete units, and avoids the high cost of operating the electric motor during periods when the gas engine is being adjusted or overhauled. It also doubles the expected years of life, or halves the maintenance cost of the gas engine, by reducing the hours of operation from an average of twenty-four to an average of twelve hours per day.



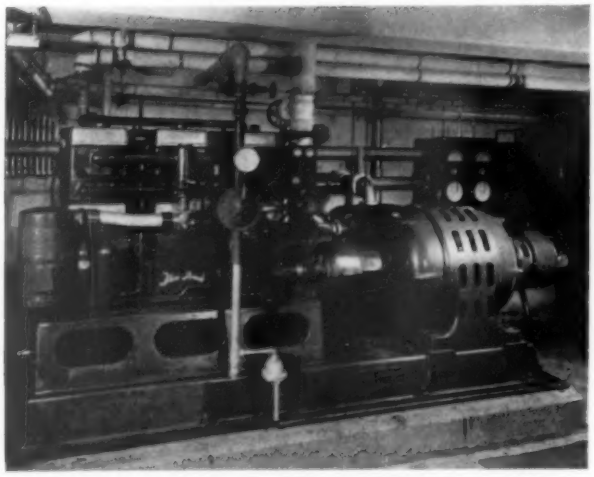
A SEWAGE-GAS ENGINE DIRECT-CONNECTED THROUGH A SPEED REDUCER TO A 2,500-CUBIC-FOOT BLOWER, BLOOM TOWNSHIP SANITARY DISTRICT, CHICAGO, ILL.

Flexibility

When engines are direct-connected to pumps, it is desirable that they operate at variable speed to take care of the variable flow through the plant during the 24-hour cycle. This means that an engine must be selected which has been designed for this variable speed, has no serious criticals in the range of speed required, and is equipped with a suitable governor and automatic speed-control device. When engines are used for driving blowers, they must operate at different constant speeds. While this service does not call for automatic speed-control, it is usually desired to operate at different speeds, depending on the amount of gas available, the varying load on the disposal plant, etc. Care must be taken to select an engine designed for such flexible operation.

Economy

Economy was placed last, not because fuel economy is unimportant, but we class it as less important than either dependability or flexibility. A properly designed gas engine will develop a horsepower-hour on approximately 10,000 Btu. Small engines, 15 to 50 hp, are less efficient and require more gas per hp. Where an oversize engine is installed, or when operating on partial loads, the fuel consumption will be higher. Fuel economy is of secondary importance for the reason that (1) the fuel itself is a by-product, and (2) 50 per cent or more of the total heat value of the fuel used by the engine can be recovered from



A CLIMAX SEWAGE-GAS ENGINE DIRECT-CONNECTED TO A 50-KW, 720-RPM FAIRBANKS-MORSE ALTERNATING-CURRENT GENERATOR AT THE DAVENPORT, IOWA, SEWAGE-TREATMENT PLANT

the jacket water and engine exhaust and utilized in the digester system. While no one wants to capitalize extravagance, it happens that the more gas the engine consumes, the more heat there will be for delivery to the digester circulating system.

Value of Direct Drives

As it has been general practice to drive pumps and blowers by electric motors, it is only natural when considering a sewage-gas engine installation to attempt merely to replace the outside source of power supply by an engine-driven generator. For plants serving towns and cities of 100,000 population or less, this is not practicable unless arrangements can be made to operate the generator in parallel with the utility company's power circuit. This is due to the fact that comparatively large motors are required to operate the sewage pumps or blowers. Depending on the type of motors and starters used, the amount of current required for starting periods is up to eight times normal running current. The generator must therefore be large enough to produce the starting current even though this is required for 15 seconds or less. The condition is further aggravated by reason of the fact that the pumps start and stop frequently. Even though sufficient generator capacity is installed, or the utility company is depended upon to supply the starting current, the loss through the generator and motor will be 20 per cent or more. This means that to drive the pumps or blowers electrically from an engine-driven generator, at least 25 per cent more power must be developed than would be required if an engine were direct-connected to the pump or blower. Obviously, the capital outlay is much greater where the engine-driven generator is installed.

Heat Recovery—Engine Cooling

The over-all efficiency of the plant can be materially affected by giving consideration to a few important details. We favor a closed jacket water circulating system with an indirect water-to-water heat exchanger; the jacket water circulated by means of a positive displacement pump driven from the engine. The digester circulating water can be circulated by means of a motor-driven centrifugal pump. This system has several advantages over that of a single circuit where the digester circulating water is passed through the engine jackets:

1. In many localities the city water is not suitable for engine cooling because of scale-forming qualities. With a separate circuit, soft water can be used for cooling the engine, and city water used in the digester system where lower temperatures maintain.
2. Lower pressure in the jacket water system minimizes the danger of leaks past head gaskets and other connections at the engine.
3. The velocity of jacket water varies in direct relation to the engine speed and horsepower, independent of the velocity of the digester circulating water.
4. A thermostatic valve with a bypass to a circulating pump suction maintains a minimum jacket water temperature to assure best engine operation. The importance of maintaining proper engine temperature is not generally appreciated.
5. We advocate passing the jacket water through the exhaust heat exchanger to pick up additional heat before passing through the indirect heat exchanger. This makes it possible to recover the desired exhaust heat without reducing the temperature of the heat exchanger below the dew-point. Much of the trouble of corroded exhaust heat exchangers has been due to condensation resulting from too low temperature. A properly designed circulating system will maintain an efficient engine temperature and recover in excess of 50 per cent of the heat value of all the fuel burned by the engine.

ACKNOWLEDGMENT.—From a paper presented before the Sanitation Group, American Society of Mechanical Engineers. Illustrations by courtesy of the author.

SUMMER PROGRAM AND GRADUATE WORK IN PLANNING AT M. I. T.

A SHORT summer course in City and Regional Planning is again being offered under the joint sponsorship of the School of Architecture of the Massachusetts Institute of Technology and the American Planning and Civic Association. The course will be held in the William Barton Rogers Building, Cambridge, Mass., beginning on Monday, July 10, and will be under the direction of Prof. Frederick J. Adams of M. I. T. and Flavel Shurtleff, Counsel to the American Planning and Civic Association.

In addition to the courses in Principles, Techniques, and Administration given in previous years, a course in Planning Legislation will be offered; and opportunities will again be provided for the study of design and research problems under supervision for those participating in the entire program.

The first series of lectures and discussions, given each weekday morning except Saturday, from July 10 to July 21 inclusive, will be devoted to basic Planning Principles. Lectures and seminars on Planning Legislation will be given during the afternoons of July 17 to July 21, inclusive, and on Planning Techniques each morning for five days beginning July 24. The final series of lectures will be devoted to problems of Planning Administration and will be held each afternoon from July 24 to July 28, inclusive.

The tuition fee for the entire program is $60, in addition to a registration fee of $5, fees of $10 for the courses in Techniques, Legislation and Administration, and $30 for the course in Planning Principles, being charged if taken separately.

Applications for participation in the program should be sent to Prof. Frederick J. Adams, M. I. T. School of Architecture, Cambridge, Mass., not later than July 1, 1939.

The Massachusetts Institute of Technology now offers two courses in City Planning Practice which provide practical experience in the offices of city, state and regional planning agencies as part of a six-year program of undegraduate and graduate work. One course follows an architectural curriculum for three years; the other a curriculum in civil engineering. Supplementary courses in the principles and techniques of planning are introduced in the fourth year. For information concerning curriculum and graduate and undergraduate scholarships, apply to Prof. Frederick J. Adams as above.

Stage Construction of Asphalt Bases

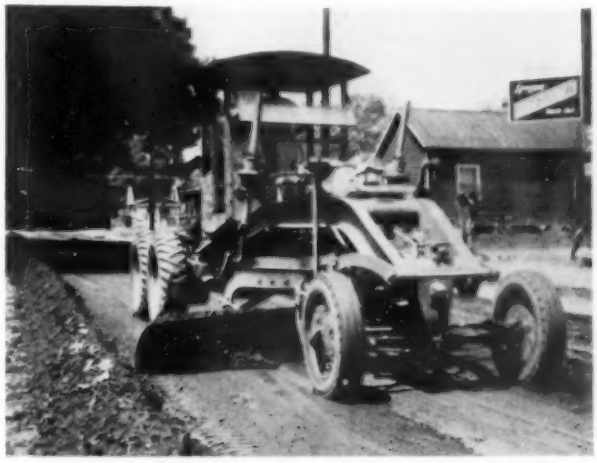
New Program Has Brought All-Weather Streets to Sections of Pensacola Never Even Graded Before

A PROGRAM of stage construction is now under way in Pensacola, Fla., which is providing taxpayers with new streets where they had practically none before, and through this method an asphalt mat is being built up that will eventually become a hard surface adequate for almost any traffic. The program is a WPA project to create permanent street paving on the existing sand-clay foundation, which in some places is a pure sand requiring the hauling-in of sand-clay to give the approximate 10 per cent clay needed to give the best stability.

The streets to be treated have been rough-graded with WPA labor assisted by the city's Caterpillar No. 10 diesel Auto Patrol and a Caterpillar Thirty-Five tractor and 10-foot Caterpillar blade. The average width of the roads included in this city-wide paving program is 27 feet. Lloyd Street, which was under construction at the time of our visit, is typical of the work now being done. This street was an old gully; in some places the water main was exposed, and it is believed that no automobile has driven through the street in many a year. The first step was to move the 8-inch water main as much as 6 feet laterally, and in many places it was dropped a distance of 1 foot. The moving of the main with inexperienced labor was done without a single leak in the Leadite joints for the length of the project, about three long city blocks. A one-half circle brick storm sewer was laid down one side of the street, and the street was graded toward that side to permit complete surface drainage.

In treating Lloyd Street the surface material or cover was all windrowed to one side and the surface shot with 0.7-gallon per square yard of SC2 asphalt cut-back applied under contract at 7.5 cents per gallon, which was covered with the material formerly bladed to the side, using the Auto Patrol. This is in reality merely a prime treatment, but the street has to be kept open to traffic once the facility has been provided for the residents. The surface crumbles within 30 days, and then it is scarified to a depth of 2½ inches with the Auto Patrol and another 0.7-gallon applied and blade-mixed for a depth of 2½ inches and opened to traffic. This amounts to the stage construction of a base. At the end of each year it is planned to re-treat the base with 0.5-gallon of the same cut-back, applied as in the first instance at 120 degrees F. until a 5-inch base is built up. Then it is planned to re-treat the surface or to sand-seal it with 0.25-gallon of RC cut-back.

PRESSURE DISTRIBUTOR WITH 21-FOOT SPRAY BAR APPLYING 0.7-GALLON OF SC2 ASPHALT ON LLOYD STREET, PENSACOLA



A NO. 10 AUTO PATROL ON FINISH GRADING AHEAD OF BITUMINOUS TREATMENT ON A PENSACOLA STREET

On the work under way on Lloyd Street at the time this article was written, the contractor, the Smith Engineering & Construction Co., of Pensacola, was applying the 0.7-gallon treatment with an Etnyre distributor using Mex-Pet asphalt.

Other Types of Treatment

An experiment was tried last year with a plant mix, in which a sand-clay was mixed in a 100-ton plant with about 10 per cent cut-back and then spread on the road from piles down the center, using the patrol grader to leave a uniform 1-inch surface course. This was rolled with a 5-ton tandem roller. The results were very satisfactory, but it is believed that the present stage construction will permit of as good surfaces on a larger number of streets at a lower unit cost.

On the present work there has been some trouble with the road-mixed material breaking at the ends of blocks adjacent to pavements where it is difficult to work the grader. This has been overcome by mixing extra material on some streets at the edge of town and stockpiling the material for patching such breaks. Oliver J. Semmes, Jr., is City Engineer of Pensacola.

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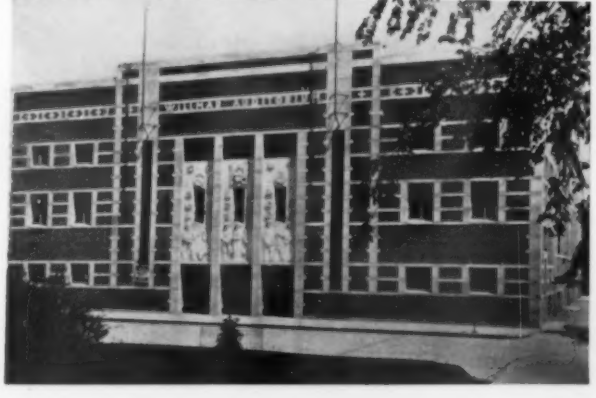
Small Towns in Minnesota and Kansas Get New Public Buildings



THIRTEEN community halls and auditoriums have recently been built with the aid of WPA funds in Minnesota; 22 auditoriums and city halls with auditoriums have been constructed or renovated in Kansas.

One of the interesting features of these municipal buildings in small towns is the variety of their uses and facilities. City halls usually contain auditoriums or assembly halls, often contain kitchens, recreational rooms and equipment. Many community buildings contain city offices. Facilities in both the community buildings in Minnesota and the city halls in Kansas range all the way from fire hall to library, jurors' room to jail, rest room to tool room. Other facilities include: council, lecture or projection room; balcony; offices; lounge; locker and rest room, showers; dining room; museum, reading room, club room; garage.

The cost of these buildings in the two states ranges from $3,313 at Bison, Kans., to $160,000 at Wilmar, Minn. (see bottom left-hand column). Type of construction and form of architecture vary from the stream-lined modern structure of brick and tile at Starbuck, Minn. (second illustration, right-hand column), to that of southwestern pueblo style in Elkhart, Kans. (top right-hand column). Many of the buildings have been built with native stone.

On the opposite page is given an outline of the elements of construction, list of facilities, and cost of each of the seven buildings (from top to bottom, left to right).

FLOM, MINN.

Construction.—One story with part basement containing boiler and fuel room. Broken ashlar masonry walls, concrete first floor slab, and wood roof.

Facilities.—Auditorium, stage, kitchen, council room.

Cost.—$25,000.

CARLTON, MINN.

Construction.—Two-story building; 60 x 34 feet; with wings 16 x 23 feet and 30 x 15 feet. One-story garage annex; 30 x 40 feet. Boiler and fuel room on first floor. Concrete foundation, brick walls, reinforced concrete floor slabs, steel joists and concrete roof slab.

Facilities.—Library, lecture room and offices on first floor; community hall, kitchen, activities room on second floor; garage annex.

Cost.—$95,000.

STEWARTVILLE, MINN.

Construction.—One story and basement; 61 x 34 feet. Heater room in basement. Broken ashlar masonry walls, concrete floor slab, and wood roof.

Facilities.—Museum, exhibition and 4-H club room in basement; office, reading room, community room, kitchen and rest rooms on first floor.

Cost.—$32,000.

WILLMAR, MINN.

Construction.—Two stories and basement, in some sections a third floor. Concrete foundation, reinforced concrete slabs, steel roof trusses and wood roof; walls of brick with stone trim. Sculpture over entrance done by Federal Art Project.

Facilities.—Band room, dressing rooms, showers and mechanical equipment room in basement; auditorium, stage, kitchen and War Memorial room on first floor; meeting rooms on second floor; meeting rooms and projection room on third floor.

Cost.—$160,000.

ELKHART, KANS.

Construction.—Southwestern style of arcnitecture adapted from pueblo of Indians; irregularly shaped; 104 x 109 feet. Adobe walls, flat roof with vega pole supports and concrete floors.

Facilities.—Council rooms, library, fire hall and quarters for firemen, auditorium seating 500 people, with stage and dressing room facilities.

Cost.—$23,000.

STARBUCK, MINN.

Construction.—Two stories and basement; 80 x 38 feet; with two wings one story each, 17 x 28 feet; fire hall addition without basement, 17 x 38 feet. Heater and fuel rooms in basement. Concrete foundation, brick and tile walls with cast stone trim. Reinforced concrete floor slabs, steel roof beams with wood joists and deck.

Facilities.—Community room and kitchen in basement; lobby, auditorium and stage, library, council chamber and fire hall on first floor; projection room on second floor; fire hall addition.

Cost.—$52,000.

COLBY, KANS.

Construction.—One story and basement; 52 x 94 feet. Native stone.

Facilities.—Auditorium for 500 people in basement; city offices, meeting rooms for American Legion, fire hall on first floor.

Cost.—$23,000.

Public Salary Tax Bill Exempts Salaries Earned Prior to January 1, 1939

FOLLOWING the Supreme Court ruling in which the right of states to tax Federal salaries was upheld, the Public Salary Tax Bill was passed by Congress last month and approved by the President on April 12. An amendment was withdrawn that would have included public securities in the legislation so as to divest them of their tax-exempt status. Those sponsoring the bill urged that the reciprocal taxation of bonds be considered separately, and indicated that the House and Senate Committees would be willing to consider an additional bill involving such proposals. It was therefore agreed not to risk delaying the measure by extending its application to bonds. Cognizance was taken, however, of the recent Supreme Court ruling, and an amendment was added for the purpose of preventing the states from collecting back taxes from Federal employees. This amendment would operate in such a way that if any state should attempt to collect taxes from a Federal employee for any year prior to 1939, its own employees and those of its local governments would immediately be made liable for back Federal taxes. As pointed out in the April 19 issue of The American Municipal Association's *Washington News Letter*:

"The purpose of the Salary Tax Law is to remove all uncertainty that may have existed as to the liability of public employees for the payment of taxes on their salaries. Federal employees are made subject to state taxes and state and local employees are placed under Federal taxation. This taxation is not to become effective until the present year. In other words, public employees are only made liable for the payment of taxes to the states and to the Federal Government on income earned after January 1, 1939.

"Every effort was made in drafting the law to remove any possibility from arising whereby public employees would be made liable for back taxes. In addition to the amendment previously mentioned that endeavors to prevent the states from collecting back taxes, another amendment was added that seeks to clarify the situation as far as employees are concerned who may have been affected by some of the recent Supreme Court decisions. The language of this clarifying amendment was expanded shortly before passage of the law so as to include the two recent Supreme Court decisions.

"The effect of this amendment would be to grant relief to any of the classes of state or local employees who were brought under Federal taxation by reason of the Port Authority case, and to grant similar relief to Federal employees brought under state taxation by reason of the two recent decisions. Thus, the intention of the bill is to remove all liability for back taxes, and to start everybody off on an equal footing. About the only public employees who would not be able to obtain refunds for back taxes are those whose work is so clearly of a quasi-government nature that they have always paid Federal taxes. At any rate, Congress has done its utmost to free all public employees from back taxes, excepting a small number of those in intermediate classifications or who are only working part time for a governmental agency and who have always been paying income taxes."

Recreational Facilities for Wage-Earners' Vacations

ADDED to the more generally recognized reasons for increasing municipal facilities for public recreation is the growing provision by employers for more liberal vacations for wage-earning employees.

A study of the vacation plans of 210 companies, employing over a million workers, reveals that most employers have adopted a more liberal policy in 1939 as compared with 1935 in regard to eligibility requirements, length of vacation, and vacation payments, according to data just released by the Management Research Division of the Conference Board.

In about three-fourths of the plans, wage-earners are qualified for some vacation privilege after one year's service or less. Many companies even grant vacation allowances to employees after lay-off or resignation, since the general concept of a vacation payment has changed from that of a gift granted by a generous employer to the recognition that a vacation represents something earned by the employee as a result of his or her work during the year.

Vacation expense, even at times of operating losses, was "worth it" to some companies, according to the reports received by the Conference Board. The management of these concerns consider that a vacation allowance helps to supplement the earnings of workers subjected to short-time hours or lay-offs. In seven plans a provision, rarely found in former years, permits all eligible employees the option of a vacation with pay or the privilege of remaining at work and receiving an allowance added to their regular pay.

A thorough analysis of shut-down, staggered and other kinds of vacation plans, eligibility provisions, vacation seasons and vacation pay is included in "Developments in Company Vacation Plans," a 24-page booklet published by the Conference Board as the thirteenth in its Studies in Personnel Policy series. This study includes twelve tables analyzing the data supplied by 210 companies during February and March, 1939, as well as actual excerpts from, or reproduction of, the vacation plans of ten leading companies.

Budgetary Statement 40 Days Sooner and Machine Posting Does It

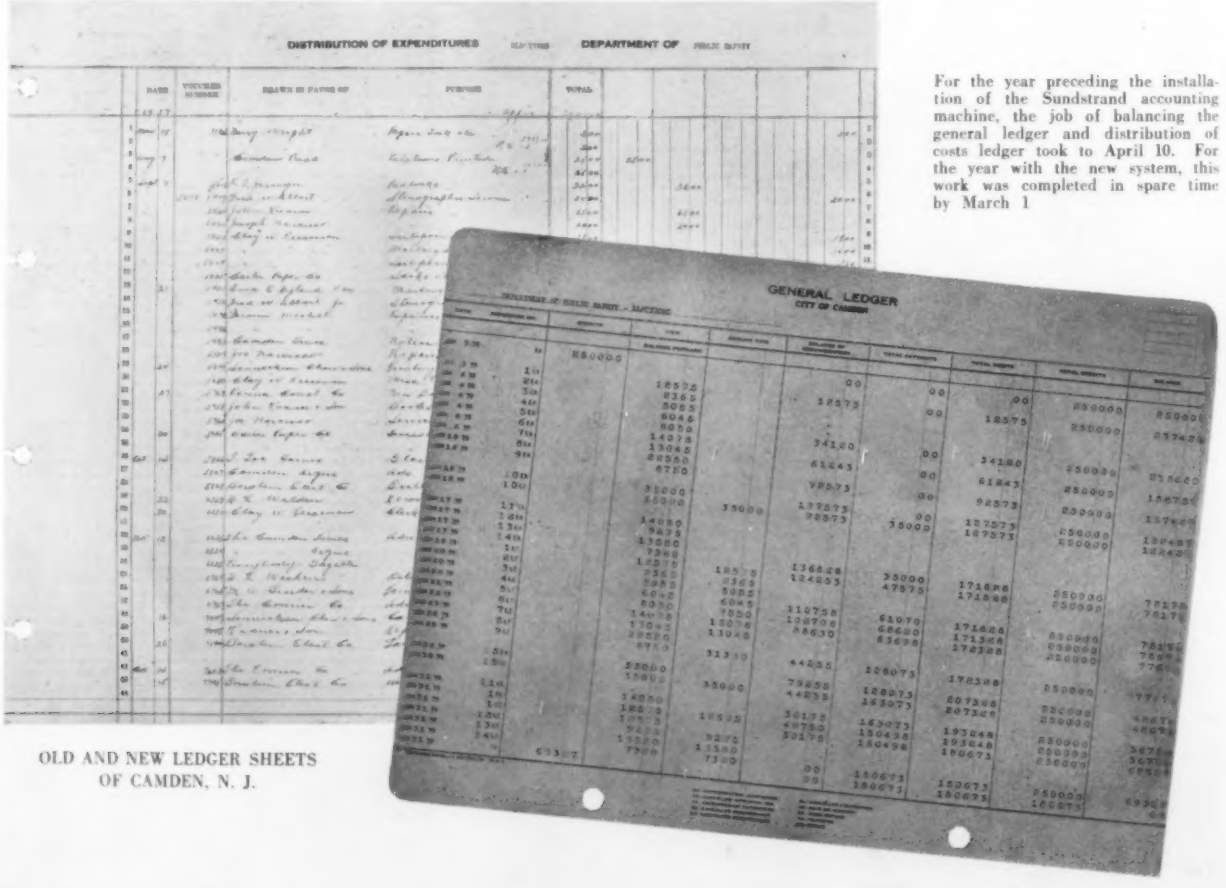
Besides Showing Balance After Every Entry, the Machine Automatically Adjusts the Balances in Each Column for the Amount of Discount or for Items Which Increase the Amount of a Final Bill

By S. P. McCORD
City Comptroller, Camden, N. J.

THE city of Camden, N. J., has changed from hand-posted bookkeeping to machine posting of expenditures against budgetary appropriations. All accounts, both Ledger and Distribution of Expense or costs, are posted on our Sundstrand class D accounting machine.

Under the old system, purchase orders were posted in a Distribution of Costs ledger, and the total posted to each appropriation was transferred to the general ledger at the end of each month. This was a very tedious method of bookkeeping and necessitated many hours of checking and figuring balances at the end of each month, in order to balance and make the necessary reports required by the comptroller. Often the end-of-the-month reports were not completed by the 10th of the following month. If the balance of an appropriation was required at any time during the month, the account in the distribution of expense had to be totaled and that total subtracted from the balance as shown by the general ledger at the end of the last month. A similar procedure was necessary to secure the total or balance for any item of cost in an appropriation. Accounts Payable was kept only in totals and not in control with each and every account. Generally, the accounting, though accurate and showing the true condition of the city, was tedious and cumbersome.

With the advent of Sundstrand machine accounting, we selected a ledger card that gave us, in the order named: date—bill number and code—credits—debits—amount paid—balance of encumbrances—total paid—total debits—total credits and balance. A buff card is used as the control account with a separate white card for each class of expense



OLD AND NEW LEDGER SHEETS OF CAMDEN, N. J.

For the year preceding the installation of the Sundstrand accounting machine, the job of balancing the general ledger and distribution of costs ledger took to April 10. For the year with the new system, this work was completed in spare time by March 1

immediately following the control card.

Under this system, purchase orders are first sorted by appropriation and items of expense, then given the next bill number, and an adding machine list and total is made. They are then posted to the proper ledger card on the Sundstrand, which automatically carries a total of all posting, so that when the run is completed we know immediately whether the total posting is correct. The bills are then posted to the distribution of expense, and the totals posted to accounts payable. In this operation four balances are picked up for each posting to a different ledger card, the machine automatically giving a clear signal that the balances are picked up correctly. The bill number and code is then entered, which the machine prints and automatically prints the date, stopping in the column marked Item. The amount of the bill is then entered, and the machine automatically calculates and prints the proper balance in each of the remaining columns.

See New Ledger Card

On the (buff) ledger card the first entry is an appropriation authorized of $2,500,000. The next entry is an encumbrance authorized of $125.75. The bill is No. 1, and the machine sets it up as a balance of encumbrances and also in the total debits column, and deducts it from the balance. The following entries from 2EA to 10EA are encumbrances authorized and show how the machine can accumulate several items in the Item column, and in one operation carry the total into the balance of encumbrances and the total debits, and reduce the balance. This eliminates the necessity of picking up four balances for each entry when more than one bill is to be encumbered. The next entry (10LE) is the liquidation of Bill No. 10. It is a bill for $350 paid as $350, and the machine automatically reduces balance of encumbrances and increases total payments, the rest of the column balances remaining unchanged. The entry of Jan. 21, Bill No. 5LE is the liquidation of the entry on Jan. 4, Bill No. 5AE. The bill was discounted $5. The machine automatically reduced balance of encumbrances by the amount of the bill in its original amount, $80.50, and increased total payments by the amount actually paid, $75.50, decreased total debits by the discounts, $5, and restored $5 to the available balance. In a similar manner, bills to which freight or postage has been added are entered and the machine automatically adjusts the balances. Each type of entry can be canceled, and the machine adjusts all balances.

At any time during the month trial balances can be taken, because as each run of bills or checks is finished the ledger is in balance. The end-of-the-month reports are made very quickly, as each ledger card shows the appropriation, the total encumbrances, the available balance, the cash disbursed, and the amount of unpaid encumbrances.

Building the City of the Future Out of Mud and Slums

By JACOB CRANE

MOST towns, like Chicago, started as trading posts on the banks of rivers. And all of them have been pulling themselves up out of the mud ever since. . . .

Early in the progressive stages of upbuilding, public enterprise and public funds were used to provide public water supplies. To date, something in the order of five billion dollars have been poured into the channels of trade for this purpose.

Sewerage systems followed in a gross amount of perhaps another five billions.

During the past fifty years not less than five billions have been put into circulation for constructing and reconstructing urban pavements and sidewalks.

City halls have been built and rebuilt.

Parks and playgrounds and parkways have been purchased and developed for health and beauty and for relief from the harshness of urban environment. More than two billions of public credit have been utilized in this work.

The little red schoolhouse has been replaced by the world's finest educational plant, which now represents another five billions of value in itself and which, in its building, set in motion two or three times that volume of purchasing power.

We could add police and fire plants, clinics, incinerators, electric systems, trolley systems, and so on.

The total runs to many billions.

Please note that these are all public enterprises to create community wealth through the use of public funds, all of which have gone into circulation. They are undertaken as the desire and need for them is felt, in line with the impulse to build up out of the mud, and to create the city—the American city.

And for all of them a fundamental democratic principle prevails. We draw upon community and national resources to provide for our community needs, and the individual family has access to all of them, *paying through taxes or otherwise only in measure with what it can afford to pay*. Here lies the secret of this greatest city building enterprise in all history.

For one or two or three centuries the process has continued; and it still continues on a vast scale. We build and rebuild our cities—up out of the mud.

Everybody is opposed to slum housing. Every city is proud of its water supply, its fine streets, its parks, its schools. And every city is appalled by its slums, of whatever type the slum housing may be.

Most American communities are tired of inaction on this painful problem. The American community, municipal and national, has decided to use its resources and its enterprise to do something about it, just as it decided in turn to act on a community basis for water supply, schools, parks, etc. In line with the great American tradition of building our cities up out of the mud, we are going to build our low-income housing up out of the mud. . . .

And it is essentially the same kind of community enterprise as the others which have engaged our cities from the days when they were trading-posts on banks of rivers. In the low-rental public housing program we draw upon the community and national resources to create community wealth, available to those who need it at rentals they can afford to pay. And in doing so we set in motion a widening circle of purchasing power which touches every phase of American economic life.

—From an address delivered February 25, 1939, at a joint meeting in New Orleans of the American Society of Mechanical Engineers and the Louisiana Engineering Society.

"Solved Our Maintenance Problems"

SAYS STREET SUPERINTENDENT

A Special Rear Drive on Adams Motor Grader No. 20 steps up the driving power of its 22½ hp. engine 65%. This exclusive feature enables the No. 20 to do grading, scarifying and oil-mix work impossible with other motor graders of its size or with cheaper maintenance units.

THE City of Corona, Calif., maintains 60 miles of granite streets with the No. 20 pictured above, getting better results at half the operating cost of previous equipment. "We feel that it has solved our maintenance problems," says the street superintendent.

Inexpensive to buy, economical to operate, Adams Motor Grader No. 20 will keep **your** unimproved streets and alleys in ship-shape at a cost you can easily afford to pay. It has many other uses also, such as grading and maintenance of parkways, airports and playgrounds and removal of snow. Mail the attached coupon today for descriptive catalog or see your local Adams dealer.

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MOTOR GRADER
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First Year's Electric Net—$31,836

Equipment—Assets—Operation—Rates—Profits—of the Hutchinson New Diesel Plant

By R. W. STROHMEIER
Superintendent, Municipal Electric Plant, Hutchinson, Minn.

THE first annual report of the Light and Power Commission of Hutchinson was issued in April, 1938, and covers the first complete year's operation of our new municipal diesel-electric plant, in competition with the Northern States Power Co. In 1936 we installed three 625-hp McIntosh & Seymour diesel engines. These engines, totally inclosed with all parts lubricated, are 5-cylinder, 17½-inch bore, 25-inch stroke, 225 rpm, driving 60-cycle generators. The plant opened formally in January, 1937, with 672 customers, of which 409 were residential, 159 commercial, 62 power, 11 commercial heating, 28 water heatings, 13 other, using that month a total of 157,140 kwh.

THREE McINTOSH & SEYMOUR ENGINES DRIVING ALLIS-CHALMERS GENERATORS IN THE POWER PLANT AT HUTCHINSON, MINN.

In February, 1937, we had 1,128 customers, reaching our top number—1,314—in December. We now have 1,312, consisting of 930 residential, 198 commercial, 82 power, 18 commercial heating, 80 water heating, 4 other, using about 300,000 kwh in a month. Increased business, including ranges, water heaters, oil burners, refrigerators, as well as air-conditioning apparatus, industrial load, and a new theater, has made necessary the addition of eleven transformers totaling 210 kva. The McLeod Cooperative Power Association's lines were connected May 22, 1937, and now serve 803 rural customers.

Net sales for the fiscal year ended March 31, 1938, amounted to $89,533, less $3,736 for discounts and allowances, leaving $85,797, or $25 per capita, for this municipality of 3,400 population.

Of the 2,976,980 kwh generated in the last fiscal year, 191,080 were used in the plant, 164,430, or 5.9 per cent, were lost on the line, and 2,621,470 were sold as shown in the accompanying table.

Gross Sales $89,533

Sales	Kwh	Aver. No. Customers	Kwh Per Customer
Residential	625,265	905	691
Commercial lighting	350,952	190	1,847
Water heating	193,305	73	2,650
Commercial heating	60,291	15	4,020
Power	726,944	84	8,653
Total — retail	1,956,757	1,267	1,544
Street lighting	99,600	1	99,600
White-Way lighting	64,230	1	64,230
Water pumping	64,240	1	64,240
Rural lines	402,600	1	402,600
Total	2,587,427	1,271	2,036
Net unbilled sales, March 31, 1938	34,043		
Total sales	2,621,470		

Operating Efficiency

This 12-months production of kwh required the consumption of 222,555 gallons of fuel oil (21.5 average gravity A.P.I.) or 0.075-gallon per kwh, or 13.4 kwh produced per gallon. The engines were lubricated by 1,266 gallons, or 0.0004½-gallon lubricating oil per kwh, or 2,351 kwh for 1 gallon oil. The average load factor was 52.5 per cent; plant capacity, 26.3 per cent; average thermal efficiency, 32.7 per cent.

The big items in the $19,620 expense of operating the generating station were: fuel oil, $11,792; labor, $5,595; insurance, $1,001; these three items amounting to 94 per cent. In the distribution expense of $6,808, labor amounted to $5,456, or 80 per cent. The administrative expense of $4,478, installations and the sensible load-building item of advertising amounted to $1,574; clerical salaries were $1,200; and the commissioners' salaries only $300.

Depreciation amounting to $13,158 was charged on seven items, as follows:

Building	$ 1,013.09
Machinery and equipment	6,653.34
Switchboard	434.65
Tools and other equipment	104.67
Distribution system	4,661.97
Auto trucks	193.73
Office equipment	96.37
	$13,157.82

Interest on bonds amounted to $8,250; interest on pledge

THE A, B, C's OF HIGHWAY SAFETY

Asphalt

Brick

Concrete

Above: Installing Crown Markers in front of Public Service Building, Newark, N. J.
Right: Closeup of Bus Stop in use in Newark, N. J.

UNBEATABLE FOR SAFETY AND SERVICE

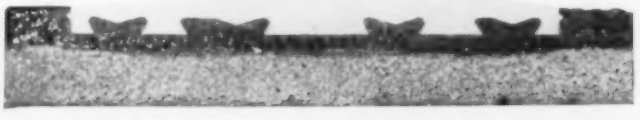
PERMANENCY—End Highway Marking Maintenance Costs With Crown Markers . . . They last for the life of the road.

WEATHERPROOF—They resist heat, cold, moisture, abrasion. Water cannot seep around edges of Crown Marker to cause road fissures, to undermine road surfaces.

VISIBILITY—TIRES passing over paint erase . . . TIRES passing over Crown Markers, polish . . . WHITE Crown Markers *remain white* . . . YELLOW AND ORANGE Crown Markers are highly visible in fog, mist or storms . . . The slight curve of the marker effectively reflects daylight or headlights, shows through water that lies on the highway.

SAFETY—Permanent visibility at bus and trolley stops, at pedestrian crossings, at intersections, as clover-leaf guides or highway center lines. The exposed curve of Crown Markers sheds foreign substances, such as obliterating mud and slush. Crown Markers offer no resistance to snow ploughs.

ECONOMY—Crown Markers can be installed in any hard road surface. For example, at the rate of 40 or more an hour for asphalt . . . Made of special specification rubber, they will not stain, tarnish, chip, crack or swell. Require only ONE installation. For full particulars write Crown Highway Marker Company, Luzerne, Pa.



CROWN HIGHWAY MARKER COMPANY

LUZERNE, PENNSYLVANIA

orders, to $1,501; doubtful accounts of $147 were written off. The grand total of expenses was $53,961, leaving a net profit or surplus balance of $31,836. The surplus balance on March 31, 1937, was $3,737, so that the plant now has to its credit $35,573.

Value of the Property

Capital assets comprise the land, valued at $3,500; the building, $52,698; machinery, $133,158; switchboard, $8,693; distribution system, $95,435; tools, $1,342; trucks, $987; office furniture and appliances, $1,108; a total of $296,921, against which already a depreciation figure of $16,397 has been charged. Total assets are recorded as $302,856, which is the value of this property that the city of Hutchinson, Minn., has created in two years. Against this are debts amounting to $267,284, including $200,000 in Series A, and $50,000 in series B bonds, both paying 3½ per cent.

Rates

Residential rates (minimum bill $1 per month) are 6 cents for the first 40 kwh; 3½ for the next 50; 2½ for the next 60. The water-heating rate is 1.05 cents per kwh. The commercial heating rates are 4.2 cents for the first 200 kwh and 3.2 cents thereafter, with a minimum net bill of $2.50.

Commercial lighting rates are 10 cents per kwh for the first 10 kwh; 8.5 cents for the next 40; 6 for the next 100. The power rates are 6 cents for the first 200 kwh; 5 cents for the next 300; 4 cents for the next 500; to 1 cent for more than 2,500 kwh; with minimum net charges of $1 per month for the first hp, $0.75 for the next 29 hp, and $0.50 for over 30 hp.

Kwh consumption per customer in 1937 averaged as follows: residential, 691 kwh; commercial, 1,847; water heating, 2,650; commercial heating, 4,020; power, 8,653; for street lighting, 99,600; white-way lighting, 64,230; water pumping, 64,240; rural lines, 402,600 kwh.

Fifteen Tests of Drunkenness

"THE drunken driver is a type of offender far more dangerous than an outlaw allowed to run loose with a gun."

Having made this statement, the Manual of the Chicago Park District then proceeds to instruct the park police in the proper questioning of a suspected inebriate.

Usually certain alibis and evasions are used by the defense in this type of case to persuade the jury that the driver was not very drunk, or perhaps not drunk at all, but merely the victim of an over-zealous police officer, or suffering from shock or illness. The following fifteen topics of investigation will assist in an examination to detect the degree of drunkenness of a suspected drunken driver and in presenting the needed evidence when the case comes to trial.

1. *"Is there anything the matter with you?"*—This affords the defendant a chance to make any explanation that he may have as to his condition. If he is sick or if something out of the ordinary is wrong, he can explain this to the interviewing officer.

2. *"Have you been drinking? If so, what, how much and when?"*—Courts have held that the taking of several drinks within a short time is prima facie evidence of guilt.

3. *"Have you been taking any medicine? If so, what, how much, and when?"*—This will prevent the defendant from claiming at the time of trial that he had just taken some medicine that caused his condition. It will also enable the investigating officer to make a check to see if the defendant has actually taken medicine, and so to prevent some innocent citizen from being unjustly accused if the investigation reveals that the medicine was taken innocently and was the cause of his condition.

4. *"Close your eyes and touch the end of your nose with the first finger of the right hand."*—It is almost impossible to find a drunken person who can perform this feat. It is an ideal test to show the degree of drunkenness.

5. *Reading.*—Have the defendant read some small newspaper article or other matter near at hand. Drunken persons are bleary-eyed and find this rather difficult. *"What time does the clock say?"*—Notations are made as to the correct time, and also as to the response of the defendant.

6. *Condition of the face, hair, eyes and clothing.*—This is noted carefully and is of vital importance.

7. *Gait and speech.*—The defendant is required to walk and talk, and observations are made of his gait and speech.

8. *Breath and coordination.*—The investigating officers require the defendant to expel his breath to see if the odor of alcohol is evident. Observations are made of his general coordination. Can he stand properly? Do his hands and limbs function as they would if he were sober? Do they lack the necessary coordination?

9. *Present mental attitude.*—Is the defendant weeping, foolish, talkative, combative, excitable? Is there acute delirium or any other characteristic of a drunken person?

10. *Present injuries.*—Many drunken drivers are involved in accidents, and these should be carefully noted.

11. Have the defendant sign his name on a card or on the back of the form on which the questions are being noted. There will be a great difference when the signature of a drunken person is compared at the time of the trial with his signature written when sober. This evidence is convincing to the court.

12. *Condition of the pupils of the eyes.*—The investigating officer examines them without a flashlight, and then shines a flashlight in the eyes to determine if the reflexes are quick.

13. Have the defendant pick up some small coin from the floor. A drunk finds this very difficult.

14. *"Stand with the eyes closed, the feet together, and the hands held at the sides.*—Does he sway? Drunken persons do.

15. *Describe his driving.*—This is a question for the arresting officer and should be very complete.

Officers armed with this information make invaluable witnesses when required to testify in court, and this investigation will cover almost any field of defense set up by the defendant.

Building Treasure Island
at the GOLDEN GATE

Treasure Island and the hills of Berkeley from San Francisco's Embarcadero. Above: An International in the Court of Pacifica.

Throughout the West, as elsewhere, International Company-owned branches and dealers are at your service. International sizes, ½-ton up.

A NEW miracle of beauty has risen from the waters of San Francisco Bay. Where the reefs of Yerba Buena Shoals lurked under the whitecaps only a few months ago now lies the largest island ever built by man—a glamorous *Treasure Island* where today the nation is guest of the West.

International Harvester salutes the Golden Gate International Exposition! In our illustration an International Six-Wheel Truck of the Bureau of Horticulture brings up one of the thousands of trees that decorate the frosting on the cake that is now being served up to millions of visitors on the Pacific Coast.

A glimpse of Paradise, a summer's holiday. And... back home ...may there be a *Treasure Island of your own*—your individual business in the sea of modern opportunity! If *hauling* is a part of it, remember that tens of thousands of keen businessmen have solved *that* part with International Trucks. It's a sure formula. They're engineered to last—built for economy.

INTERNATIONAL HARVESTER COMPANY
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180 North Michigan Avenue Chicago, Illinois

INTERNATIONAL TRUCKS

Asphalt Plant Used Effectively by Massachusetts City

Worcester Handles All Hot Mix for City Paving and Sidewalks

USING a 15-year-old asphalt plant, the city of Worcester is producing all its sheet asphalt and a sand mix for temporary patching and for its extensive PWA sidewalk program. Inadequate batching facilities are all that keeps the city from "going to town" with all kinds of hot mix paving materials. State specifications prevent the production of Mass. Type I bituminous concrete, but the city is turning out the old Type D hot mix, which closely approximates the newer specifications and is found very satisfactory for city work. The plant is kept busy producing 190 tons per 10-hour day on the sand asphalt at present.

The Asphalt Plant

The Cummer plant purchased by the city of Worcester 15 years ago is now located in the City Yard near the 23-year-old plant which has finished its service and is now ready for the acetylene torch.

All aggregate is hauled to the Yard by truck and fed by six men to the bucket elevator which carries it to the 18-foot x 42-inch oil-fired rotary drier. The hot material is raised by the hot elevator to the hot bin, where it is screened to remove oversize and foreign matter that has been through the drier. Then the material is weighed out in a batch-box with standard beam scales.

Asphalt is brought in by tank car on a high spur above the Yard and run by gravity into the two asphalt storage tanks, having a capacity of 20,000 gallons. From these it is pumped through superheated lines to the asphalt plant. In addition, there are two tar storage tanks of the same capacity, and on the other side of the Yard power plant six additional 18,000-gallon tanks for fuel and asphaltic road oils. The fuel oils are used for the Yard boilers, which provide heat for the buildings as well as for the operation of the asphalt plant, for vaporizing the fuel oil for the drier and for the operation of the two Kinney asphalt pumps in a small building at one side of the power plant and beneath four of the fuel-oil tanks. A driveway beneath the other pair of fuel-oil tanks permits the city's three power distributors to load direct from the asphalt or tar tank car on the track above.

The ½-ton Cummer pug-mill provides a complete mixing of the batches in about 1½ minutes. The sheet asphalt filler is added in the pug-mill by hand instead of being weighed out separately in the batch-box. A dry clay dust is used for the filler material.

The operating crew, except for the feeding crew, consists of two plant men and a foreman. Electric motor drive is used for the drier and for the fan for the drier exhaust.

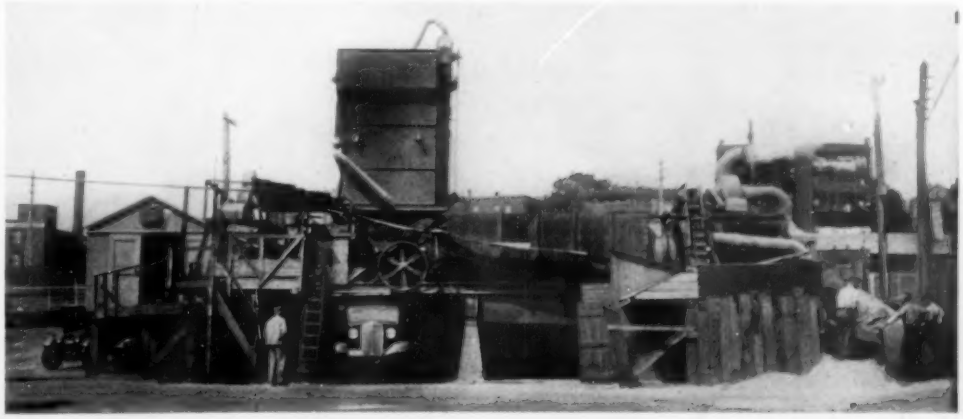
Plant Mixes and Uses

Sheet asphalt is used for the standard city street paving throughout Worcester except where penetration or sand blanket is used. The sheet asphalt mix is made as follows: 840 pounds of graded sand, 50 pounds of mineral filler, and 110 pounds of 50-60 paving asphalt.

The sand mix is used for patching oil-blanket streets and for temporary patching of utility cuts in other streets before the final paving is replaced when the backfill has consolidated. Even for temporary patches, the edges are required to be cut vertical and the material adequately hand-tamped. For the repaving, the material is also rolled with the 5-ton or 12-ton rollers. The largest portion of the sand mix is being used now on the WPA sidewalk program. In 1938 over 60 miles of sidewalk varying from 4 to 10 feet in width were completed. These walks are laid on a graded subgrade with 1 inch of gravel and about 1½ inches of the sand mix. The sand-mix batches consist of 1,860 pounds of sand and 140 pounds of asphalt.

The Worcester municipal asphalt plant is operated under the direction of Herbert Green, Street Commissioner and Superintendent of Streets, with William F. Finneran as General Foreman. Texaco asphalt and Koppers Tarmac D. M. are used.

T. R K.—897.



THE ASPHALT PLANT AT THE CITY YARD WHICH SERVES THE CITY OF WORCESTER, MASS.

LOOK through to the future a century hence, you men who are planning and constructing cast iron underground mains, and what can you be sure of! Just this: cities may be destroyed—mains abandoned or relocated—but there will be a *hundred years or more of useful life* in every length of cast iron pipe, whether it be pit cast or centrifugally cast by the Super-de Lavaud chill-free process.

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A State Planning Board Studies the Hospital Problem

By T. G. GAMMIE
Director, Division of State Planning, Oklahoma

MEASURED by accepted standards, Oklahoma hospital facilities are severely lacking. With general hospital beds the shortage is 737; 4,559 are available. Sanatorium beds for treating tuberculosis number 1,000 in Oklahoma, but this is 1,600 short of the number needed.

In Oklahoma, the tendency is toward state operation of general and tuberculosis hospitals. In 1937 the state operated 12.3 per cent of general hospital beds, as compared with 11.2 in 1927. It supported 96.3 per cent of the tuberculosis beds in 1937, as compared with 84.6 in 1927.

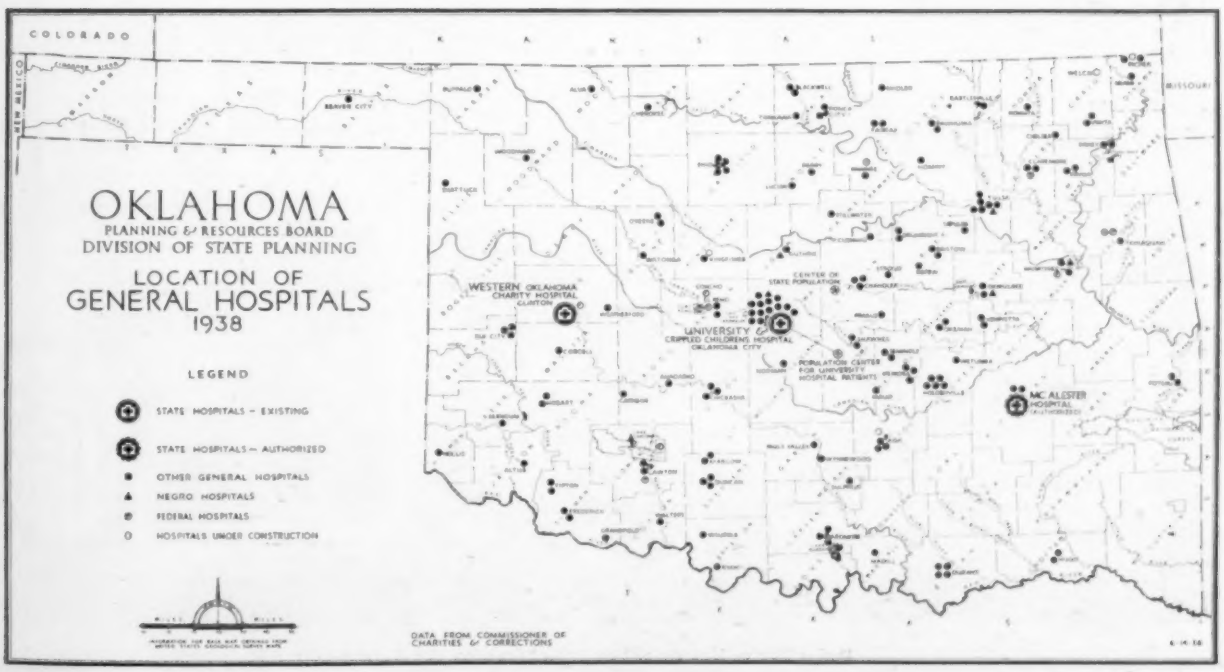
Another striking fact is the rate at which hospitals for profit are going out of business. Forty-eight per cent of general hospital beds were maintained for profit last year, while over 60 per cent had been for this purpose ten years previous. An explanation may be that about half of Oklahoma's people cannot afford to pay for hospital service. General treatment for indigent adults, war veterans, and children, training for physicians by hospital practice, and control of tuberculosis, are public functions performed by Oklahoma's seven state hospitals.

Spotlight attention on the national health problem by the National Health Conference, forcing attention of the American Medical Association, has in turn prompted the Division of State Planning of the Oklahoma Planning and Resources Board to review problems of hospitalization in the report, "State General and Tuberculosis Hospitals in Oklahoma," on which this article is based.

At the State University and Crippled Children's hospitals in Oklahoma City medical teaching and treatment of indigents operate at cross-purposes in attempts to select proper types and variations of cases to meet medical school standards and at the same time treat the most urgent charity cases on a county quota basis. More beds are needed to clear this situation.

Oklahoma maintains the only state tuberculosis and general hospital for veterans in the United States. This institution is located at Sulphur and meets all hospital standards. Greater need for veteran hospitals may arise with increasing age and attending infirmities but, in the long-term, decreases will appear, barring another war. Two new state charity hospitals, one at Clinton in operation and the other at McAlester awaiting appropriations for equipment and operation, mark the emergence of a new state policy regarding indigent hospitalization.

Child health as a public function is administered by Federal, state, county, and private organizations. Although cooperative relationships are almost ideal at present, lack of official central authority and guidance may later prove a problem. Deficiencies in Oklahoma's child health pro-



PUZZLE! Find one person who won't thank you for SOFT, IRON-FREE WATER!

Every citizen . . . Every industry needs PERMUTIT WATER CONDITIONING

Want to win a few bets? Here's an easy way to do it: Challenge all takers to name one person who won't benefit from soft, iron-free city water.

They won't be able to name a single soul. For Permutit conditioned water gives Father better shaves, Mother better shampoos, Baby better baths. It saves money for every industry, from large power plants and textile mills right down to the corner laundry, beauty parlor or restaurant.

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gram include facilities for optometry, dentistry, and minor treatments, hospital isolation quarters, service for Negro children, and sufficient educational opportunities for physically disabled children. Over-all expansion of child hospital facilities, however, is unneeded, in view of expected future decreases in the child population throughout the state.

Tuberculosis may sometime fade to practical oblivion with leprosy and smallpox, but much remains to be done. Clinics and sanatoriums to find, treat, and prevent tuberculosis must be supplemented by a comprehensive follow-up program for patients leaving sanatoriums, to encourage right living habits and suitable occupations. With two state sanatoriums—Talihina and Clinton—Oklahoma is somewhat deficient along these lines; particularly in following and finding cases. More sanatorium beds, physicians, and nurses are needed. Tuberculosis is still rampant among Negroes and Indians, as shown by a death rate of 150 compared with 38 for whites.

Greater demand for charity hospitalization is indicated. How shall the need be met? With more state institutions, or with state fees to private hospitals?

The Case for Federal Financing of New Money for Schools

FOLLOWING are the principal conclusions of a study* of "Federal Aid and the Tax Problem," prepared for the Advisory Committee on Education by Clarence Heer:

1. From the point of view of all four of the major tests of a good tax system—fiscal adequacy, administrative efficiency, equity, and economic effects—Federal aid for education offers a better method of raising new money for schools than state and local taxation.

2. From the point of view of fiscal adequacy, Federal aid is superior because it places the responsibility for raising new school funds on the level of government which has the widest range of productive tax sources at its disposal and which is in the best position to exploit those sources effectively.

3. From the point of view of administrative efficiency, Federal aid for education is to be preferred because it will permit the needed school revenue to be raised by methods which involve less annoyance and expense to the taxpayer, which present fewer opportunities for tax avoidance and evasion, and which entail relatively lower administrative costs.

4. From the point of view of equity, Federal aid for education represents the more desirable alternative because it will place the responsibility for obtaining additional school revenue on the level of government best fitted to distribute its taxes according to the principle of ability to pay. To the extent that public education is a matter of national concern, Federal aid will make it possible more nearly to equalize the burden of maintaining a national minimum of educational opportunity throughout the country. To the extent that education is a state and local function, Federal aid will provide a means of correcting the inequities in the present system of school support which result from the extra-territorial shifting of state and local taxes.

5. Finally, from the point of view of economic effects, Federal aid for education offers the better mode of procedure because the Federal Government has far greater freedom than have the states and localities to select fiscal measures appropriate to given economic and social objectives.

* Published 1939 by the U. S. Government Printing Office; available for 15 cents from the Superintendent of Documents, Washington, D. C.

Who Pays the Tax on Residential Real Estate?

"In order to ascertain the incidence of the tax on residential real estate, it is necessary to distinguish between land and buildings," says Dr. Heer in the chapter on Federal Aid and Tax Justice, in the above-mentioned report:

"Theoretically the part of the property tax which is attributable to the value of the land rests upon the owner and cannot be shifted, although new owners may capitalize this tax. The far larger part of the tax attributable to the value of buildings and other improvements is, in the case of rented property, normally shifted to the tenant in the shape of a higher rental. This, however, may not always be possible in cities that are overbuilt or have a declining population. In the case of homes occupied by their owners, the tax on the value of the building falls, of course, on the owner.

"To the extent that the above generalizations are valid, it is apparent that the tax on residential property is in large part a tax on expenditures for housing. Individuals at the lower end of the income scale ordinarily spend a higher proportion of their income for housing than do those in the upper income brackets. Thus, according to the findings of the Brookings Institution, families and unattached individuals with incomes under $1,500 and $750 per annum, respectively, constituting 42 per cent of the nation's population, spent on the average one-third of their income for shelter and home maintenance in 1929. At the other extreme, families and unattached individuals with incomes over $25,000 and $15,000 per annum, respectively, spent on the average only 12 per cent of their income for these purposes in that year. It may be concluded that the property tax on residential real estate is a regressive tax, falling almost three times as heavily on the poor as on the wealthy."

Ignoring and Facing the Facts of Housing

TWO statements received by THE AMERICAN CITY *from Detroit last month:*

From a prominent Counsellor at Law:

"They (the lower third) get pretty decent housing here in Detroit—better than most anywhere."

From the April *Civic Searchlight*, bulletin of the Detroit Citizens' League:

About "Slums" in Detroit

"Members of the Detroit Citizens League from the beginning have taken a conservative view of the national and local problem of housing, and especially where any unit of government is concerned. Our members now seem to be convinced that government must furnish some measure of assistance if the problem of housing is solved for those elements in our population whose family income is below standard.

"During the past year a housing survey has been made in Detroit at the expense of the National Government. As it nears completion, city officials are preparing to make use of the facts recorded in order to establish better city planning, a zoning system for Detroit and a policy on housing which will be both reasonable and economical.

"The picture of the problem in its stark difficulties was recently given in a summary published in our local papers, from information assembled by the Detroit Housing Commission, from the real property survey made by the WPA and from other sources. In the *Free Press*, Thomas P. Danahey, President of the Detroit Housing Commission, was quoted as follows:

" 'Detroit slums, scattered in several sections of the city, are composed of about 75,000 housing units, unfit for human habitation, in which 300,000 persons—a population equal to that of Grand Rapids and Flint combined—spend their lives.

" 'This accumulated city of slums,' Danahey said, 'has 75,000 dwellings without basements, baths or inside water. The roofs leak, the floors and foundations sag, the porches are broken. Cheap partitions separate the rooms and children sleep in coal bins.

" 'Exposed pipes create fire hazards. Rats, cockroaches and bedbugs infest these places.

" 'In this area * * * tuberculosis averages 217 cases for each 100,000 of population compared to 74.3 for each 100,000 in the rest of Detroit; pneumonia averages 488 cases to each 100,000 of population in contrast to 76.6 cases in the city as a whole.

" 'In some instances the owners of these shacks are receiving as high as a 47 per cent return on their investment according to the 1938 assessed valuation of the property,' Danahey said."

Is the Counsellor at Law really proud of such housing conditions—or has he never seen how the lowest third live?

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What Makes a City Good?

And What American Cities Are Best?

AN ATTEMPT to answer the two questions at the head of this article has been made by Edward L. Thorndike, leading scientist and educator, in a research project financed by the Carnegie Corporation of New York, the results of which have been published by Harcourt, Brace and Company in a 1939 book, "Your City."

The book is the result of a three-years study of American cities of over 30,000 population, and its conclusions are based on quantitative treatment of nearly a million items of recorded data.

High and Low Averages Compared

One of the tables in "Your City" compares for thirty-seven traits the average scores in "general goodness" of ten high cities with those of ten cities having low scores. Some of the entries of special interest to municipal officials are:

	Average Scores of 10 High Cities	Average Scores of 10 Low Cities
Infant death rate (deaths under 1 year per 1,000 live births)	39	96
General death rate (per 1,000)	10.6	17.6
Deaths from typhoid (per 100,000 population)	0.7½	10
Per capita public expenditures for schools	$ 23.50	$ 8.60
Per capita public expenditures for libraries and museums	$ 1.18	$ 0.15
Percentage of persons 16-17 years old in school	85	49
Per capita public expenditures for recreation	$ 2.16	$ 0.63
Rarity of extreme poverty (monthly rental less than which is paid by one family in twenty)	$ 30.00	$ 5½
Average wage of workers in manufacturing plants	$1,650.00	$850.00
Per capita number of homes owned	.13	.07
Per capita number of automobiles	.33	.16
Per capita domestic installations of electricity	.29	.12
Deaths from automobile accidents (per 100,000 population)	23.3	40.7
Per capita value of public property in schools, libraries, parks and hospitals	$ 144.00	$ 54.00
Per capita value of public property minus public debt	$ 107.00	$ 21.00

Others of the thirty-seven traits have to do with per capita numbers of telephone sets and of radios, per capita circulation of certain magazines, percentage of illiterates, deaths from homicide, etc.

In discussing this method of rating the "goodness of life for good people," Dr. Thorndike says, in part:

"Good traits go together in communities, as they do in persons. The city well provided with creature comforts tends also to be well provided with schools and libraries; the city that has a small percentage of its families living in homes renting for less than ten dollars a month is also freer than the average from child labor; health, educational opportunities, social welfare, creature comforts, and the rest are positively correlated.

"They are not perfectly correlated. If they were, our best cities would be heavens, or at least would surpass anything on earth, and our worst cities would reek with ignorance, misery and vice.

"A city which was as high in every trait as the highest city reported for that trait (which is what would occur if all the correlations were perfect) would lose only one baby out of thirty during the first year of life, would have no deaths from typhoid except very rarely in the case of some traveler who brought it with him. It would spend (per capita) over ten times as much public money as the inferior city for teachers' salaries and over twenty times as much for textbooks and supplies, and would have over fifty acres of parks for every thousand of its population, with swimming pools, tennis courts, dancing pavilions and the like kept in first-class condition. It would have no slums; three-quarters of its families would own homes; hardly a child under 15 would be compelled to work; over nine-tenths of those 16 and 17 would be in schools, taught by teachers receiving average salaries of over $2,500 and over $3,500 in elementary and high schools respectively. Its public property in the form of schools, libraries, parks and hospitals would be worth over $200 for every man, woman and child. Its public property (not counting streets or sewers) would be worth enough to cover all its public debt and leave a balance of over $300 per person.

If Any City Had All the Bad Traits

"A city which was as low in every trait as the lowest city reported for that trait would have one out of eight of its babies die within a year after birth, would lose many persons from typhoid, would spend less than $5 of public money per capita for teachers' salaries, and almost nothing for textbooks and supplies, nothing for a public library, and nothing for parks (of which it would have not an acre). Nearly two-fifths of its families would be living in homes renting for less than $10 a month, only one family in eight would own its home, less than a third of the girls and boys 16 or 17 years old would be in school, a tenth of the boys 10 to 14 and a twelfth of the girls 10 to 14 would be working for wages, the average salary of a high-school teacher would be under $1,200, and that of an elementary-school teacher under $800. The great majority of its homes would be without gas and over half of them would be without electricity; about nine in ten of them would be without a telephone. It would have no Y.M.C.A. or Boy Scouts, or similar organizations; there would be less than one trained nurse, and less than half a dentist, per thousand population; if an artist came there to live he would find no artist to keep him company. Over eighty persons per hundred thousand population would die from syphilis each year, and nearly sixty from homicidal attacks. The city would be nearly or quite bankrupt, all its public property (excluding the streets and sewers) not being worth enough to pay it debts."

Dr. Thorndike's method of scoring "general goodness" would designate as absolute zero the non-existent city which stood as low in each of the 37 traits he has studied as the lowest city in the trait. At the other extreme, there would be a score of 1,541 for a city—if such existed—which did as well in each and every item as the highest half-dozen of the 310 cities did in that item. On this basis of computation the actual scores recorded in "Your City" range from 1,110 down to 330, or an average of 730. The cities rated above this average are listed on page 79.

Dr. Thorndike does not fall into the too common error of regarding a low tax rate *per se* as a measure of the superiority of a city. Indeed, he ignores tax rates entirely in his method of scoring. But he does include per capita expenditures for schools, libraries, museums, and recrea-

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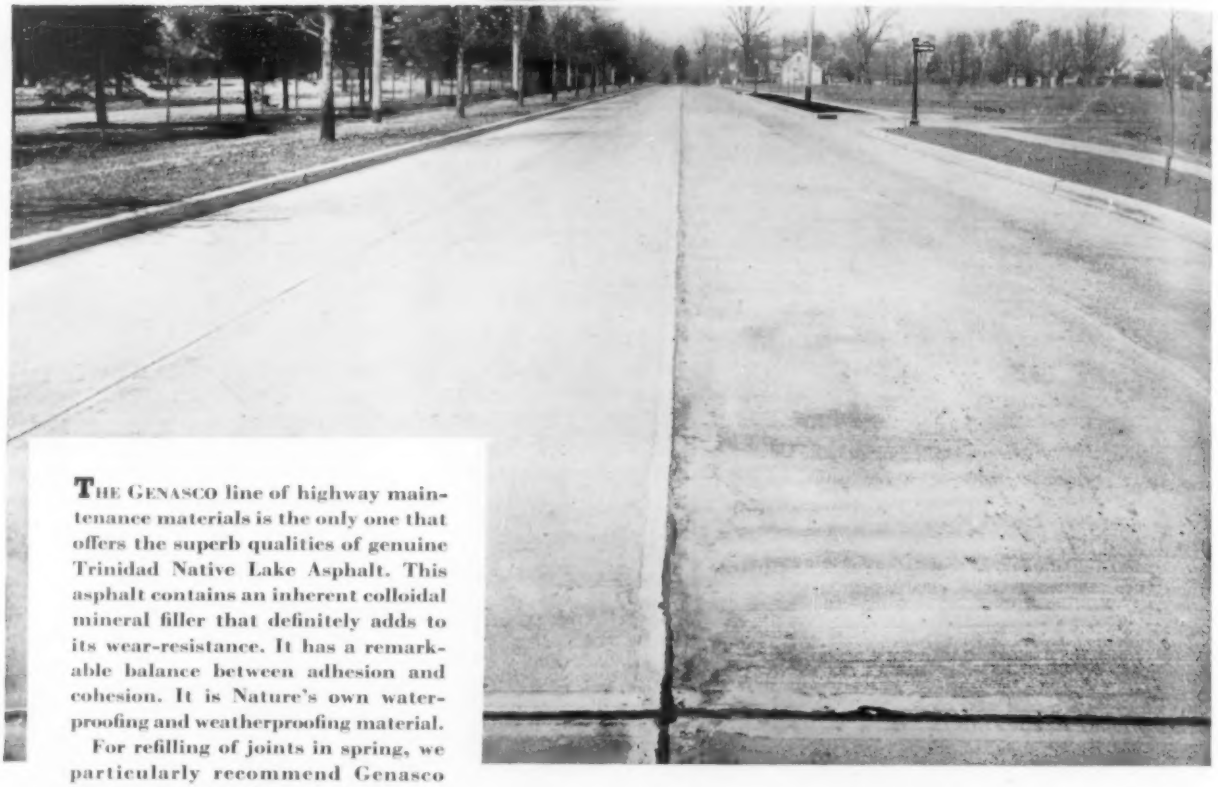

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tion; and in so doing he rates highest in these services the cities with the highest expenditures.

1,110—Pasadena, Calif.
1,020—Montclair, N. J.
Cleveland Heights, Ohio
990—Berkeley, Calif.
Brookline, Mass.
970—Evanston, Ill.
Oak Park, Ill.
950—Glendale, Calif.
Santa Barbara, Calif.
White Plains, N. Y.
930—Santa Monica, Calif.
910—Long Beach, Calif.
Lakewood, Ohio
890—Alameda, Calif.
Newton, Mass.
New Rochelle, N. Y.
East Cleveland, Ohio
870—Oakland, Calif.
San Jose, Calif.
East Orange, N. J.
850—Los Angeles, Calif.
Santa Ana, Calif.
Colorado Springs, Colo.
Mount Vernon, N. Y.
830—San Diego, Calif.
Springfield, Mass.
810—Grand Rapids, Mich.
Kalamazoo, Mich.
Minneapolis, Minn.
Plainfield, N. J.
795—Fresno, Calif.
Bloomfield, N. J.
Rochester, N. Y.
Madison, Wis.
Seattle, Wash.
780—Stockton, Calif.
Arlington, Mass.
Medford, Mass.
Quincy, Mass.
Battle Creek, Mich.
Highland Park, Mich.
Duluth, Minn.
765—Sacramento, Calif.
San Francisco, Calif.
Hartford, Conn.
Berwyn, Ill.
Waukegan, Ill.
Cedar Rapids, Iowa
Des Moines, Iowa
Lincoln, Nebr.
Schenectady, N. Y.
Mansfield, Ohio
Portland, Ore.
Spokane, Wash.
Racine, Wis.
750—Denver, Colo.
Rockford, Ill.
Fort Wayne, Ind.
Topeka, Kans.
Boston, Mass.
Watertown, Mass.
Dearborn, Mich.
Jackson, Mich.
Muskegon, Mich.
St. Paul, Minn.
West New York, N. J.
Albany, N. Y.
Elmira, N. Y.
Jamestown, N. Y.
Syracuse, N. Y.
Yonkers, N. Y.
Norwood, Ohio
Sioux Falls, S. Dak.
Milwaukee, Wis.
735—Stamford, Conn.
Washington, D. C.
Aurora, Ill.
Joliet, Ill.
Elkhart, Ind.
Cambridge, Mass.
Lynn, Mass.
Malden, Mass.
Worcester, Mass.
Lansing, Mich.
Omaha, Nebr.
Irvington, N. J.
Newburgh, N. Y.
Niagara Falls, N. Y.
Toledo, Ohio
Easton, Pa.
Harrisburg, Pa.
Salt Lake City, Utah
Bellingham, Wash.
Green Bay, Wis.
Oshkosh, Wis.

What to Do About It All

As might have been expected, Dr. Thorndike's researches have discovered that the cities which lead in "general goodness as abodes for good people" are those which stand highest in personal qualities of the citizens and the amount of their incomes. To these causes the author attributes at least four-fifths of the difference in goodness of cities. More specifically, he estimates that "if perfect measures of every fact about these cities and their inhabitants were available, the differences . . . in the goodness of life for good people would be attributable:

About	60 per cent	to differences in the mental and moral qualities of the populations
"	3 "	" " " " " their physical health and energy
"	25 "	" " " " " their incomes
"	2 "	" " " " " the works of previous generations (other than giving birth and training to the present generation)
"	5 "	" " " " " the work of the government
"	1 "	" " " " " homogeneity of race and culture
"	4 "	" " " causes at present unknown

"The surest and most important fact is the relative unimportance of everything except the quality of the citizens and their incomes.

"Do these same forces account largely for the differences in the goodness of life for good people in smaller cities, towns and villages? There are adequate reasons to think that they do. Are they potent also as between nations, or do differences in soil, climate, water power, coal, mineral resources and the form of government swamp them? There is good reason to believe that they still count heavily in the case of nations; only careful appraisal can determine how much."

Dr. Thorndike's major advice is the suggestion that:

"Citizens need not hunt far and wide for novel or subtle reforms nor consult witch-doctors at home or abroad. They have the straightforward task of facing the facts, making themselves better, attracting good people to their city, and earning more money. . . ."

But the author of this unique study recognizes, more than might be inferred from the foregoing quotation, that the intelligent citizen has obligations to his community which do not stop with increasing his own income and inducing others in affluent circumstances to make that city their home:

"We should be loyal to our city; we belong to it and it belongs to us. But we should also be realistic and honest. We should be our most searching critics and hide no weaknesses from ourselves. If we say 'My city, right or wrong,' we must work to minimize the number of matters in which it is wrong. There is a vicious tendency in matters political and social to think and do what makes us comfortable temporarily rather than what makes us better off permanently. We foolishly distort facts to fit our wishes, hopes and fears when we should adjust our behavior to the facts. We stone the prophets of evil and neglect the experts who lack ingratiating manners. Boasting, boosting, mutual admiration, and pride have their place, but they will not make water or milk purer, or debts smaller, or men and women more competent. A city needs to see itself as it really is, as well as to see a glorious vision of it with the eye of faith. . . ."

There can be no doubt that, in the cities rated in the upper brackets of the tabulations in "Your City," per capita taxes average considerably higher than in those having the lowest scores. But how many residents of communities offering the best living conditions would regard lower taxes as sufficient inducement for putting up with the municipal services of the least desirable communities?

This does not mean, of course, that the poorer cities can emulate the wealthier ones in all respects; but it does mean that well-planned and well-administered cities tend to attract and hold residents able and willing to pay for decent standards of community life.

Michigan Cities Authorized to Finance Parking Space

A NEW Michigan law allowing cities to issue revenue bonds to finance the purchase or construction of municipal parking facilities is the first law of its kind to be enacted by any state, the American Society of Planning Officials reports. The law places the operation of parking lots or other facilities on the same status, with regard to revenue bonds, as sewage disposal, water supply or any other municipal activity financed by such bonds. Bonds of this type must be retired from earnings of the project for which they are issued.

Michigan's Legislature enacted the law at the request of the city of Battle Creek, which had sought a Federal grant to assist in construction of a $220,000 overhead parking structure. Public Works Administration officials doubted the legality of a revenue bond issue to finance the city's share of the cost, and the Legislature amended an existing law to make bonds issued for this purpose legal.

The Legislature's action was significant in that it provided a way for construction and operation of permanent parking areas, planning officials believe. Under private ownership, a parking lot owner suddenly may decide to sell his lot as a building site or for some other purpose, forcing motorists to renew their search for parking facilities. There is also the possibility that parking charges may be lowered under public ownership, once the financing bonds are retired.

At least 35 cities in the country own municipal parking lots. Most of them spend little money on the lots, and ordinarily no attendants are supplied. Only two or three charge a fee.

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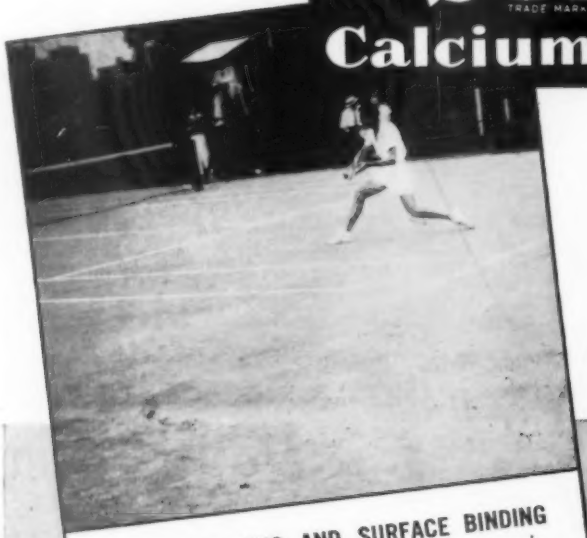

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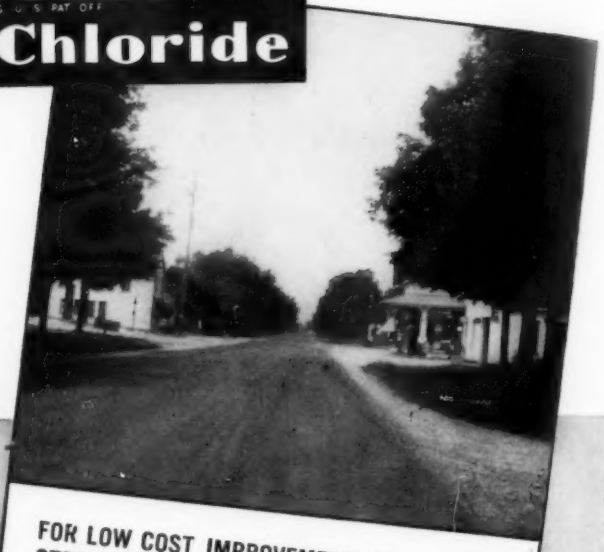

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The Future of Airports in Cities

The Glamor of Airport Ownership, the Potential Business Involved, and the Municipal Investment in Land, Buildings and Service Facilities, Maintain the Cities' Interest

ON January 1, 1939, there were 2,374 airports and landing fields in the United States, 791 of which were municipal airports. From these figures it is evident that cities have played a large role in the development of American aviation. Without airports, it obviously would have been impossible to land planes at all. Without airports which met national standards, no national civil airways system could have been established. And without airports which were being continually modernized to meet the demands made by larger and larger planes, our present airliners could not have been placed in service.

Major Types of Airport Financing

Federal, state and municipal governments have spent and are spending huge sums on the construction and operation of the nation's airports. Some idea of the amounts spent and of the agencies responsible for these expenditures may be gained from the table.

Approximately $17,500,000 has been spent by the Bureau of Air Commerce to serve planes which are using the 22,671 miles of Federal airways. These expenditures have been for intermediate fields and lighting, and radio and teletype communication. In addition to these major activities, the Bureau of Air Commerce examined and licensed pilots and mechanics, licensed aircraft, inspected flying schools and repair stations on request, established and enforced airline regulations, investigated accidents, collected, compiled and published statistics and reports, and conducted a Safety and Planning Division. All these activities have now been taken over by the Civil Aeronautics Authority.

The Federal Government has also spent large sums on airports through its emergency agencies. The WPA, on March 31, 1938, had spent or obligated $87,908,998 on approximately 1,000 airport projects. On March 14, 1938, the PWA had spent or obligated $2,767,445 on non-Federal airports. In addition, PWA had spent over three million dollars on the improvement of airways facilities.

From available reports it appears that the states have spent only a small proportion of the total amount which has gone into airports during the last ten to fifteen years. Virginia spent $74,179 on airport development and improvement during the years 1928-36. In New Jersey, only $15,000 had been appropriated to the aviation commission.

What Airports Cost the Cities

Each city which has equipped itself with an airport has had to go through a series of steps, every one of which involved sizable expenditures. First, the airport site had to be acquired. Sometimes the city already owned suitable land, but when it did not the land had to be purchased. An intensive survey of municipal airports made several years ago showed that the average airport size at that time was 396.5 acres and the average cost of the airport site was $974.28 per acre. After acquisition, the site had to be cleared at an average cost of $190.05 per acre, graded at a cost of $280.55 per acre, drained at a cost of $217.49 per acre, and surfaced, lighted and provided with suitable hangars, depots and other buildings.

It is because of such costs as these that the construction of airports is so expensive an undertaking. A recent survey of 209 municipal airports indicated that 116 cities had paid an average of $508,705 for purchasing, constructing and extending their airports. Kansas City and Detroit each reported an outlay of $5,700,000, while one city, Norfolk, Nebr., reported it had spent only $600. The total capital outlay for the 116 municipal airports reporting was $59,030,841. Even allowing for a considerable margin of error, it is probable that the cities of this country have spent between $350,000,000 and $400,000,000 to acquire the 791 municipal airports in existence on January 1, 1939.

The second major item of expenditure is maintenance and operation. In the 1930 survey made by the Harvard University School of City Planning, 31 cities reported an average annual cost of $27,052 for maintenance and operation. In a 1936 survey, 20 of these cities reported an average cost of $29,683. This same survey showed that the average operating cost for 88 municipally owned airports reporting was $19,862. The greatest annual operating loss, $179,057, was incurred by the Pittsburgh municipal airport.

Even more significant was the fact that of the 84 municipal airports answering the question "What is the annual profit or loss on your airport?" 78 replied that they incurred a loss in 1936. This loss totaled $1,039,936 for the 78 airports, and averaged $13,332 per port. Only 6 airports reported a profit.

These figures, however, cover only operation. If the cost of depreciation, of payments for interest and principal on airport bonds, and other similar items, were included, not one of the 78 airports could have reported a profit, and the average loss of the majority might easily have been doubled or tripled.

The third major item of airport cost is extension and improvement. The figures given above for capital outlay include in some instances funds spent for extension and improvement, and there is no way of separating original outlay from subsequent capital expenditure.

Glamor and Potential Business

There is a certain glamor in municipal ownership of an airport. Chambers of commerce feel that such an institution will stimulate municipal commerce and business. In a city where airport expansion is an issue, a local newspa-

. . . and the road-builder has done his share by providing "TRACTIONIZED" SKID-SAFE TARVIA PAVEMENT . . .

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PRELIMINARY REPORT ON AIRPORT CAPITAL INVESTMENT AND OPERATING FINANCES AS OF JANUARY 1, 1937*

	All Airports	Airports Grouped According to Population of the Cities in Which Located: Over 500,000	100,000 to 500,000	50,000 to 100,000	25,000 to 50,000	5,000 to 25,000	Under 5,000
I. Total Capital Investment (1,137 airports)	$151,530,605	$35,511,470	$51,812,599	$12,041,568	$17,593,101	$21,875,405	$12,296,462
A. Total cost of land	49,231,640	13,247,528	14,304,982	2,801,437	7,499,128	7,185,284	4,193,281
B. Total cost of improvements	102,298,965	22,263,942	37,507,617	9,640,131	10,093,973	14,690,121	8,103,181
1. By types of improvements:							
(a) Landing area	62,755,383	13,702,394	20,000,878	6,897,396	7,052,467	9,368,171	5,734,077
(b) Buildings and equipment	39,543,582	8,561,548	17,506,739	2,742,735	3,041,506	5,321,950	2,369,104
2. By types of airports:							
(a) Municipal (570)	85,021,547	19,040,254	36,108,869	8,865,684	7,020,631	9,577,496	4,408,613
(b) Commercial and private (567)	17,277,418	3,223,688	1,398,748	774,447	3,073,342	5,112,625	3,694,568
3. By source of funds:							
(a) Federal Government	44,797,914	7,502,594	13,126,720	6,246,365	5,958,267	7,089,461	4,874,507
(b) State	3,775,139	—	2,885,735	164,151	147,541	251,077	326,635
(c) Other	53,725,912	14,761,348	21,495,162	3,229,615	3,988,165	7,349,583	2,902,039
II. Average Capital Investment per Acre (1,137 airports)	880	5,281	2,364	918	959	457	193
A. Average cost of land per acre	286	1,970	653	207	409	150	66
B. Average cost of improvements per acre	594	3,311	1,711	711	550	307	127
III. Total Gross Income (1,137 airports)†	2,281,387	329,309	641,284	166,642	257,017	572,650	314,485
A. Total gross income (970 miscellaneous airports)	1,281,859	102,715	115,642	58,674	169,215	523,182	312,431
B. Total gross income (167 scheduled air terminals)	999,528	226,594	525,642	107,968	87,802	49,468	2,504
1. Gross income from air transport operations	402,207	138,075	166,791	39,260	40,163	16,240	1,678
2. Gross income from miscellaneous operations	597,321	88,519	358,851	68,708	47,639	33,228	376
IV. Total Operating Expenditures (1,137 airports)†	$3,062,938	$768,549	$935,385	$206,381	$264,945	$569,432	$317,796
V. Progress of Airport Survey:							
A. Total number of civil airports	2,005	67	121	106	136	502	1,100
B. Total number of questionnaires returned	1,137	21	79	51	100	343	543
1. For municipal airports	570	8	51	35	50	186	240
2. For commercial and private airports	567	13	28	16	50	157	303

* This summary based on National Airport Survey, Bureau of Air Commerce, August 16, 1938.
† For calendar year 1936.

per will call attention to the activities of a rival city and state quite frankly that "we must keep up with the Joneses."

Either of these reasons is as basic as the question of cost and the possibility of a return on the community airport investment. American cities now have enough experience with airports to know that any hopes of deriving a profit from them are unfounded. A few cities have benefited from the airplane industry through the location of factories or service headquarters. In St. Paul, for example, the voters were asked to support the recent airport bond issue as "an entirely justifiable community investment—not only because it will furnish employment for two years for about 700 men, but also because St. Paul is the headquarters of one airline with an annual payroll of $330,000, the northwest mail terminus (involving a $600,000 annual payroll lost to the city if the Post Office Department decides to move all first-class mail by air), and the headquarters of the 109th Aero Squadron with a $70,000 annual payroll." Unfortunately, however, airports usually bring little except prestige, a commodity of which taxpayers soon tire.

Conclusion

The American Society of Planning Officials and the American Municipal Association in their Public Administration Service Bulletin No. 62, "The Airport Dilemma," discuss the subject of municipal interest in aviation in great detail. In discussing airport financing, this bulletin suggests that cities redouble their efforts to secure added local revenues where possible, to help pay airport deficits. While a small deficit is no real cause for concern, experience has shown that losses have a habit of mounting. All other things being equal, airports should be self-supporting if reasonable methods can make them so. American airports could well afford to take a leaf from the book of the British Airdrome Owners' Association, which early in 1938 issued a schedule of charges that has been accepted by the Air Ministry and that the Association hopes will be used as a basis for a government-sponsored standard list of service charges and fees at all airports.

Whether the time has yet arrived when a small admission fee will secure public acceptance is debatable. Such a fee is generally established practice in Europe. In Amsterdam, for example, the public is charged an entrance fee of 15 Netherland cents. A sight-seeing tour costs an additional 15 cents. Much the same arrangement has been made in Rotterdam, and in both cities the municipality, owner of the airport, receives two-thirds of the revenue and the airline the other third.

The United States Conference of Mayors has urged Federal aid for something like 2,300 airports, of which about 200 are airline ports at present, and some 600 others are airports for cities and towns which logically will be included in airline and feeder expansion. The cost of such a program might run as high as $275,000,000 of Federal money, with a municipal participation to the extent of $115,000,000, or a total airport program of close to $400,000,000.

The CAA has recently submitted to Congress three proposals for a system of national airways and airports. The first alternative proposal calls for an expenditure of $128,000,000; the second, $230,000,000; and the third, which would provide "a completely adequate airport development program," would require $435,000,000. The third proposal would provide for 3,500 airports, thus placing an airport within 20 minutes of "every reasonably compact population group of as many as 5,000 persons." Also of interest is that for the first time airports are separated into four classes: the first with runway lengths of 1,500 feet; the second, 2,500 feet; the third, 3,500 feet; and the fourth, 4,500 feet. There is not at the present time a single airport in the United States which qualifies for the highest class.

The exclusive SAFETY-FLANGE feature of the Mueller-Columbian Fire Hydrant holds collision damage to a minimum. When these hydrants are struck a blow that is hard enough to cause damage, the top of the hydrant barrel falls harmlessly to the ground and the bottom barrel section remains intact in the ground. All vital working parts are protected from damage — only the SAFETY-FLANGE section needs to be replaced. This can be done by one man in less than one hour as there is no digging or water shut-off. The cost for parts is only six dollars.

More and more communities are installing Mueller-Columbian Fire Hydrants because of the definite savings shown in maintenance expense, not only because of the SAFETY-FLANGE feature but because of many others. Ask any Mueller representative to explain the other exclusive features, or write us direct.

MUELLER CO.
CHATTANOOGA, TENN.

When you write for that catalog, kindly mention THE AMERICAN CITY.

Water Rates and Service Charges

1939—Part III

Covering Domestic and Industrial Meter Rates, Discounts and Penalties, Installation Charges, Fire Hydrant Rentals and Fire Sprinkler Costs

The Dalles, Ore.

Present population	6,000
Population served	6,700
Number of active services	2,210
" " meters	172
" " hydrants	145
Miles of water main	65

The meter rates for water service within the city limits are 7c per 1,000 gals. All water used over 720,000 gals. per month is billed at 5c per 1,000 gals. Outside the city the rates are 7c per 1,000 gals. for the first 25,000 gals. and 13c per 1,000 gals. for all over 25,000 gals. The rate charged to private schools is $1.50 to $20.00 a month on a flat rate, or 7c per 1,000 gals. by meter. Government and county buildings are charged on a flat rate of $5 to $10 per month.

Applications for the use of water must be filed with the Superintendent of the City Water Works, stating fully the purposes for which the water may be required. When a permit is granted, the city furnishes a corporation cock for the main, and a stop cock for installation at the street curb, by the plumber doing the work for the consumer.

On failure of the consumer to comply with the rules and regulations, or to pay the water rent on time, the water may be shut off until payment is made of the amount due plus a charge of 50c for the expense of turning the water off and on.

There is no charge for city fire hydrants nor for services attached to automatic sprinkler systems for fire protection on private property.

J. I. Chambers,
Superintendent, City Water Works.

Concordia, Kans.

Present population	6,000
Population served	5,000
Number of active services	1,650
" " meters	1,650
" " hydrants	87
Miles of water main	Unknown

Subject to a minimum charge of 75c per month, the following rates are charged for consumers of water within the corporate limits of Concordia.

First 400 cu. ft. used, per month	$ .75
	Per 1,000 Cu. Ft.
Next 3,000 cu. ft. used, per month	1.25
" 20,000 " " " " "	1.00
All over 25,000 cu. ft. used, per month	.75

All bills for water are due on the first day of each month, and if not paid by the tenth day of the month due, a penalty of 10% is added to the bill. All charges for water are liens against the property on which the water is consumed, and it may be sold to pay such charges. All property owners are held responsible for all water used on their property, regardless of any agreement between renter and owner.

The rates to water users outside the corporate limits of the city are:

First 400 cu. ft. used, per month	$ .95
	Per 1,000 Cu. Ft.
Next 3,000 cu. ft. used, per month	1.25
All over 3,400 cu. ft., per month	1.00
Minimum bill per month	.95

The city maintains, tests and repairs all meters through which city water is sold, and replaces worn-out or defective meters at cost to the city, provided the damage has not been caused by the owner or by his direction, in which case the owner must pay all costs. The Water Commissioner may have any meter tested at any time, and any property owner may request that his meter be tested when he believes it to be inaccurate. If the meter is found to be inaccurate, the cost of the water during the month previous is determined from the same month of the preceding year or by an average for the same months for preceding years. If this is impossible or inequitable under the circumstances, then the charges are determined by some other just and reasonable method.

Before any consumer of water residing within the city can connect to the main, an application must be filed with the City Clerk by the owner or his agent, giving the location of the property, the purpose for which the water is to be used, the size of the tap desired, etc. Before the permit is granted, a fee must be paid as follows:

¾" tap	$18.50
1" "	23.00
1¼" "	30.00
1½" "	37.00
2" "	57.50

When a pavement must be cut to make the tap, an extra charge of $15 is made. When the fees are paid and the permit granted, the Water Commissioner makes the tap and carries the connection to the nearest lot line and installs the meter after the meter pit has been constructed satisfactorily by the property owner. Thereafter the property may be connected by a licensed plumber.

When water is cut off for violations, a charge of $1.00 is made in addition to the other accrued charges and must be paid before water is turned on again.

There are no hydrant rentals charged and no special charges made for connections to private sprinkler systems for fire protection.

James O. Wolfe,
City Engineer.

Oxnard, Calif.

Present population	8,000
Population served	8,000
Number of active services	1,595
" " meters	153
" " hydrants	137
Miles of water main	16.25

Meter rates are due and payable on the first day of each month succeeding the month in which the water is used, and are delinquent if not paid on or before the 10th. The Municipal Water Department may require a reasonable deposit to guarantee payment of water bills. The quantity rates for all domestic and business purposes are:

First 500 cu. ft. or fraction thereof	$1.00
Next 500 cu. ft. or fraction thereof	.15 per 100 cu. ft.
Next 5,000 cu. ft. or fraction thereof	.10 " " " "
Excess of 6,000 cu. ft.	.08 " " " "

Wherever meters are installed, the following minimum monthly charges are collected:

⅝ to ¾" meters	$ 1.00
1" "	1.75
1½" "	2.50
2" "	3.00
3" "	3.50
4" "	5.00

Any consumer may have the accuracy of the meter on his premises tested by the Water Department by making written application accompanied by a deposit of $1.00. If the meter is found to register more than 2% in excess of the actual quantity of water passing through it, the meter is removed and corrected and the fee returned to the consumer, and his water use for the current month corrected accordingly. Otherwise, the fee is retained by the Water Department.

The Municipal Water Department installs all meters and meter boxes without charge to the property owners and maintains the meters and meter boxes from Department funds.

Where a consumer has been shut off for non-payment of a water bill, a payment of $1.00 is required, in addition to the payment of the bill, for turning on the water.

NEWPORT NEWS, VIRGINIA, STANDBY GENERATOR SET

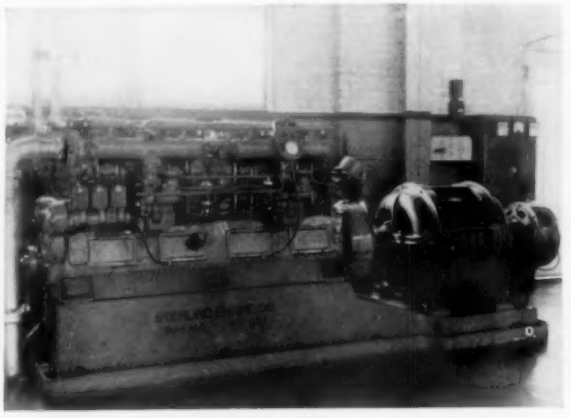
Typical of the custom of providing emergency power, for any contingency, in municipal water works.

STERLING HIGH DUTY

Sterling

INTERNAL COMBUSTION ENGINES

Emergency Power is available within a few minutes if these units are manually started—a few seconds, if automatic.



Newport News is equipped with a 200-K.W. Crocker Wheeler Generator, 1200 R.P.M., direct-driven by Sterling Viking 6-cylinder 425-H.P. gasoline engine.

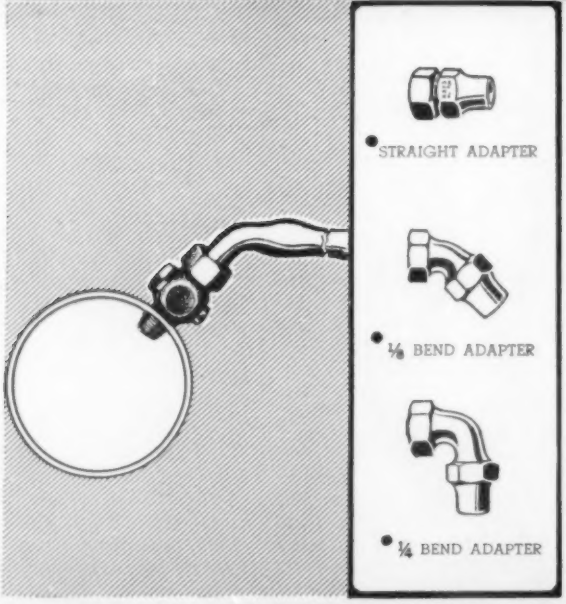
STERLING ENGINE COMPANY

Home Office and Plant,
1270 Niagara Street,
Buffalo, New York

Dept. C-11

Branch Office,
900 Chrysler Bldg.,
New York, N. Y.

From LEAD to COPPER



Typical of the ease with which you can convert to Hays Copper Services is the Lead to Copper change-over at the left. Here, Hays adapters convert from W. W. S., Increased I. P. or Listed I. P. Thread on the corporation and curb-stop to Double Seal or Radius Seal copper pipe connections.

Whatever service method you now use, you will find that Hays has made it easy and economical to replace with permanent copper services. Hundreds of communities are making original installations and replacements by the Hays Copper Service Method with a very minimum expenditure for new equipment and fittings. Outline your requirements and Hays will show you how to save time and money and make your Main to Curb Service outlast the main.

HAYS MANUFACTURING CO., ERIE, PENNA.

HAYS COPPER SERVICE METHOD

Fire-line meters are installed on all private fire services or sprinkling services and are read July 1 and January 1 of each year. Public fire hydrants are furnished and installed by the Water Department at no cost to the city.

O. L. ISHAM,
Superintendent, Water Department.

Lower Miami and Claypool, Ariz.

Present population	3,000
Population served	2,400
Number of active services	602
" " meters	601
" " hydrants	None
Miles of water main	10.1

Persons desiring service from the Citizens Utilities Co. make application at the office of the company and establish credit by making a cash deposit of $5 for domestic service and not less than $10 for commercial service, these sums being equal to an estimated payment for two monthly bills. Consumers whose accounts are not paid on or before the 10th of the month, for services rendered during the preceding month, may after five days' notice by the company be denied further service until the account has been paid in full, including a re-connection charge of $1.00 per meter.

The company at its own expense extends its mains for new customers and installs that portion of the service pipe, meters, meter boxes and connections, which the company owns, if such cost does not exceed two times the estimated annual gross revenue to be derived from the business. If such cost does exceed this sum, the applicant for the service must advance the estimated cost of construction. This amount is refunded on the basis of 15% of the gross revenues derived from the sale of water delivered through this extension until the entire amount of the deposit is refunded. The refund is made in February of each year, based on the revenues derived during the preceding calendar year.

The first schedule of water rates is for commercial and domestic use for general purposes, as follows:

First 3,000 gals. per meter per month	$2.50
Next 27,000 gals. per meter per month	.60 per 1,000 gals.
Next 70,000 gals. per meter per month	.55 " " "
Excess gals. per meter per month	.50 " " "

The minimum charge is $2.50 per meter per month. A discount of 10% is allowed if payment is made in full on or before the 10th day of the calendar month following that in which service was rendered, provided that all prior bills due the company have been paid. The company also makes rebate or increase in the rate in accordance with the following paragraph in its rate schedule:

"Less the applicable proportionate part of any decrease, or plus the applicable proportionate part of any increase in taxes or governmental impositions which are assessed on the basis of gross revenue of the company and/or the price or revenue from the water or service sold and/or the volume of water pumped or purchased for sale and/or sold hereunder, as may be effective December 1, 1937."

The rates for multi-dwelling or apartment-house service through one water meter are the same as for general commercial and domestic use, except that the minimum monthly charge is $2.50 for the first house or apartment, plus $1.00 for each additional house or apartment served. This minimum charge entitles the consumer to use 3,000 gallons for the first $2.50 minimum, plus 1,650 gallons for each $1.00 of minimum charge in excess of the first $2.50. These rates carry the same 10% discount.

An optional large consumer water service is available to consumers guaranteeing an annual metered use of 750,000 gals. immediately adjacent to existing service mains. The rate for the first 750,000 gals. per meter per year is $262.50, and the excess is billed at 35c per 1,000 gals. This also carries the same 10% discount. These bills are payable in eleven installments of $21.88 and a final installment of $21.82, except if the actual monthly consumption of water, at 35c per 1,000 gals., should total more than $21.88, the additional water is billed at this rate. Similarly, large consumers taking more than 1,500,000 gals. are billed $375 for the first 1,500,000 gals. per meter per year, and $.25 per 1,000 gals. The monthly installments are $31.25, except when the actual monthly consumption of water is greater than that amount.

An optional domestic combination watering and household schedule is offered for domestic consumers for the months of June, July and August of each year, with a monthly minimum charge of $3.00 per meter, for which 5,000 gals. of water is allowed. The rates are:

First 30,000 gals.	$ .60 per 1,000 gals.
Next 70,000 "	.55 " " "
Excess of 100,000 gals.	.50 " " "

A combination watering and household schedule available to owners of multi-dwellings on one lot only, or to apartment-house owners where the service is rendered by the company through one water meter, and carrying a monthly minimum charge of $3.00 plus $1.00 per month for each additional house or apartment for which water is allowed at the regular rate, is offered as follows:

First 30,000 gals.	$ .60 per 1,000 gals.
Next 70,000 "	.55 " " "
Excess of 100,000 "	.50 " " "

There are no hydrants connected to the company's mains, as the mains are too small. There are 52 2" standpipes for fire service.

GERARD FAUBERT,
Manager, Citizens Utilities Company,
Miami, Ariz.

Hammonton, N. J.

Present population	7,700
Population served	6,500
Number of active services	1,500
" " meters	1,500
" " hydrants	244
Miles of water main	26.7

All bills for water not paid within 30 days after the date on which they are due, January 1 and July 1, have a delinquent charge of 15c for the first month and 10c for each succeeding month. After a reasonable length of time the water supply is turned off and is not turned on again until the bill is paid in full, including a charge of $1.00 for turning off and on. The meter rates for water consumed are:

First 5,000 cu. ft. (covering a semi-annual consumption of 5,000 cu. ft.) rate per annum	$15.60
Per 1,000 cu. ft. semi-annually:	
Over 5,000 and not exceeding 10,000 cu. ft.	1.50
" 10,000 " " " 20,000 " "	1.25
" 20,000 " " " 100,000 " "	1.05
" 100,000 cu. ft.	.80

An annual rental charge for the meter furnished by the city is made as follows:

⅝" meter, rental per annum	$ 1.60
¾" " " " "	3.20
1" " " " "	4.00
1½" " " " "	5.00
2" " " " "	6.00

The Water Commission furnishes and installs the meter at the following rates, which are subject to market changes:

⅝"	$17.50
¾"	30.00
1"	40.00
1½" meter, not installed	43.00
installed	53.00
2" meter, not installed	65.00
installed	75.00

If a service pipe must be installed in addition to the tap and meter, an extra charge is made. The cost of making the connection to the main, furnishing the corporation cock, service pipe, curb-stop and stop-box, for various sizes of taps, is as follows:

¾" tap	$18.00
1" "	25.00
1½" "	35.00
2" "	50.00

A permit for opening a county or state road must be applied for and paid for by the consumer.

There is no charge for fire hydrants for public fire protection.

GEORGE W. LOBLEY,
Superintendent, Water Department.

Boonville, Mo.

Present population	6,800
Population served	6,500
Number of active services	1,800
" " meters	1,800
" " hydrants	156
Miles of water main (approximately)	20

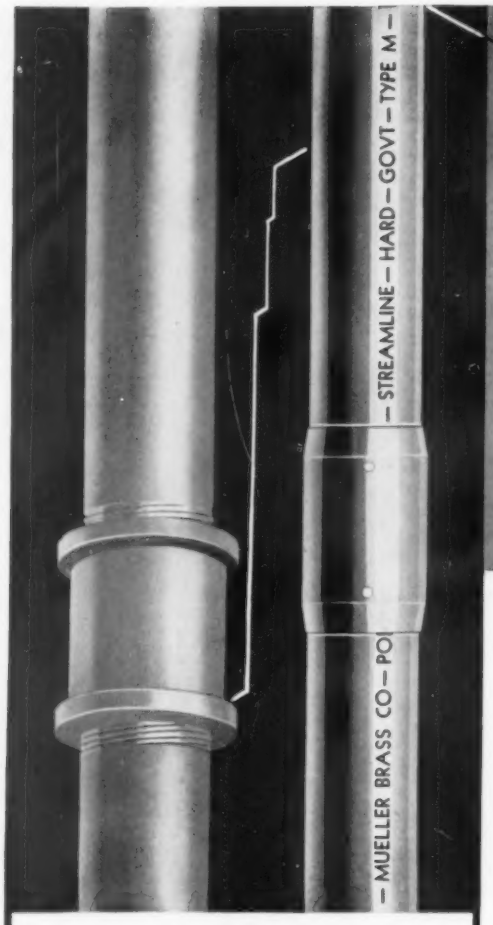
The meter rates for Boonville are payable at the end of each month, as follows:

First 10,000 gals. used per mo.	$ .40 per 1,000 gals.
Next 30,000 " " "	.30 " " "
" 35,000 " " "	.25 " " "
" 50,000 " " "	.20 " " "
" 75,000 " " "	.18 " " "
" 200,000 " " "	.16 " " "
" 400,000 " " "	.12 " " "

Minimum charge 90¢ per month, allowing use of 2,250 gals.

If payment is delinquent for 10 days, a penalty of 10% of the bill is added, and for further delay the Superintendent is required to cut off the supply of water until all delinquent charges and fees have been paid. These include a fee of 50c for turning on the water. A fee of 50c is charged also for resetting or replacing a meter.

Persons desiring small quantities or water service for a short time, such as



Specify STREAMLINE

TRADE MARK REG. U.S. PAT. OFFICE

COPPER PIPE AND FITTINGS

A system of copper will outlast the building ★ ★ ★

● Note the great difference in appearance between the two sections of pipe illustrated above. The STREAMLINE Copper Pipe (right-hand illustration) is much neater and compact in appearance. It actually appears smaller in diameter but the STREAMLINE Copper Pipe has as great, or greater internal flow capacity than the threaded pipe.

Piping systems connected by threaded fittings are weakest at the joint because the metal is cut away to fabricate the thread. This is a potential point for future breakage and leaks.

In contrast to this copper pipe connected with STREAMLINE Fittings is actually strongest at the joint and is so constructed that its internal diameter is uniform and smooth—much less chance for clogging and pressure loss.

● Copper has long been recognized as the most durable of metals for piping purposes. There are authentic cases on record where it has lasted for hundreds of years and, with the exception of a slight tarnish, just as serviceable as when first installed.

Athough copper is not a cure-all for all water conditions—and there are certain sections in the country where its use is not recommended—it does fill the requirements for an all-purpose piping in the great majority of cases, and in most instances is a far superior piping to install.

An efficient—and lastingly efficient plumbing or heating piping system is one of the most vitally important factors in any home, or in any building where a conducting system is required. It is the actual nerve center upon which the very livability of the dwelling depends—and this becomes more and more apparent after some years of service.

STREAMLINE Copper Pipe connected with STREAMLINE Fittings assures a piping installation that incorporates tremendous resistance to rust, clogging and vibration. More than that, its cost is little, if any higher than materials that corrode and leak after a few years of service.

STREAMLINE Copper Pipe conducts hot water quicker with less heat loss than ferrous piping. It requires less room to install, has no threaded joints to leak and is the best possible insurance against plumbing repair bills. Like all good things, STREAMLINE has many imitations but no equals. Specify genuine STREAMLINE. Insist upon its being used.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

contractors, are required to install a meter and pay the regular established rates. The meter is owned by the Department, and the user pays for the installation and removal of the meter.

If a consumer doubts the accuracy of a meter, he may request that it be tested. The charge for tests for various sizes of meters is as follows:

⅝" to 1" meters	$ 2.00
1½" to 2" "	5.00
3" "	7.50
4" "	10.00
6" "	15.00

The entire cost of the test is borne by the consumer unless the meter is proved to be registering incorrectly beyond 5% of the correct amount, in which case the deposit is refunded. When a meter is found to be not registering, the Superintendent estimates the amount of water used from the date of the last reading based upon the quantity usually consumed by the patron during a like period.

Application for service is made in writing and a cash deposit made varying from $2.50 to $20 to furnish the city adequate security and protection against loss. The service pipe from the water main is furnished and maintained at the expense of the property owner and is installed by the Water Department from the water main to the curb cock, including the service box, the curb cock and the tapping of the water main. Meters must be installed under the supervision of the Water Department, and the consumer must provide a suitable housing and is responsible for any damage done to the meter caused by extreme heat, cold or accident. If, however, the meter box is built by the Water Department, the consumer is not liable for such damage, and the meter is kept in repair at the expense of the Water Department. Meter boxes are installed by the Department for $8 each.

MAJOR C. HAGAR.
Superintendent, Boonville Water Department.

Menominee, Mich.

Present population	11,000
Population served	11,000
Number of active services	2,500
" " meters	2,400
" " hydrants	319
Miles of water main	40

All water rentals, whether flat or metered, are due and payable on the first of each quarter. Those not paid within 10 days are considered delinquent, and on 10 days' notice the water may be shut off; $1.00 is charged for turning on the water after a shut-off for non-payment of bills.

The flat rates are $2.50 for four rooms or less, $2.75 for five rooms, $3.00 for six rooms, $3.50 for seven rooms, and $4.00 for eight rooms; all charges being quarterly.

The meter rates are:

First 500 cu. ft. or less	$ 2.50
Next 500 " " not exceeding 1,000 cu. ft.	3.00
" 500 " " " 1,500 " "	3.25
" 1,000 " " " 2,500 " "	3.50
All over 2,500 cu. ft.	4.00

Water used in excess of 2,500 cu. ft. per month is charged the 1st of the following quarter at 15c for the first 100 cu. ft. and 7½c per 100 cu. ft. for all additional.

All bills unpaid 10 days after the date of issue carry an additional collection fee of 25c.

Applications for water service are made at the Water Department office and require a full description of the premises to be supplied. After a payment of $3.00 as a deposit to be applied on water service, a permit is issued and the Water Department taps the main and lays the service pipe to the outside of the curb, including a stop and box, without expense to the applicant, except in the case of temporary use of water, when the expense is paid by the applicant. Service pipes from this point are laid by a licensed plumber. No service larger than 6" is permitted.

Private fire hydrants are billed at $60 each, payable quarterly, and public fire hydrants $50 annually.

Automatic sprinklers for fire protection are billed at 4c each. Where manufacturers desire fire protection service and the line is distinctly separate from the regular city water service, plumbers are forbidden to make any connections to the fire protection service except for fire protection. All openings on fire service lines are sealed by the Water Department and a fine of $10 imposed if the Water Department is not notified immediately when the seal is broken for any other purpose than fire service.

S. J. WILLIAMS.
Superintendent, Water Department.

Jeffersonville, Ind.

Present population	15,000
Population served	15,000
Number of active services	3,174
" " meters	2,432
" " hydrants	216
Miles of water main	Unknown

The Public Service Company serves Jeffersonville, Clarksville and Claysburg, with populations of 12,000, 2,500 and 500 respectively. The water rates for these three cities for residential service on a monthly basis are:

	Per 1,000 Cu. Ft.
1 to 3,999 cu. ft. inclusive	$2.40
4,000 " 7,999 " " "	2.10
8,000 " 11,999 " " "	1.80
12,000 " 19,999 " " "	1.50
20,000 " 39,999 " " "	1.20
40,000 and over	.90

The minimum monthly charge is 96¢.

The residence, commercial and industrial rates for the Jeffersonville Suburban and New Albany Suburban services are:

	Per 1,000 Cu. Ft.
400 to 3,999 cu. ft. inclusive	$2.70
4,000 " 7,999 " " "	2.3625
8,000 " 11,999 " " "	2.025
12,000 " 19,999 " " "	1.6875
20,000 " 39,999 " " "	1.35
40,000 and over " "	1.0125

The minimum monthly charge based on the size of the meter is:

½" or ⅝" meter	$ 1.50
¾" "	2.00
1" "	3.00
1½" "	5.00
2" "	7.50
3" "	10.00
4" "	20.00
6" "	40.00

The collection charge on all bills over the minimum for both tables of rates above is 10% on the first $3.00 of net billing, and 3% on the next $300.00 of net billing, with a limit of $9.30 for the collection charge.

The commercial and industrial water rate for Jeffersonville is:

First 400,000 cu. ft.	$ .75	per 1,000 cu. ft.
Next 133,333 " "	.675	" " "
Over 533,333 " "	.60	" " "

A flat rate for fire protection only is available for commercial and industrial water services in Jeffersonville, as follows:

For fire service from 2" line for standpipe	$2.3333 monthly
For fire service from 3" line for standpipe	3.7500 "
For fire service for automatic sprinkler service through 4" line, first 700 heads	4.5833 "
Each additional head	.0083 "
For fire service for automatic sprinkler service through 6" line, first 1,000 heads	6.2500 "
For each additional head	.0083 "
Private fire hydrant, each	5.4166 "
Municipal fire hydrant, each	4.1666 "

There is no collection charge on these fire protection rates. A flat rate for municipalities only, covering self-closing hydrants at street corners, is established at $2.0833 per month.

F. A. SCHAEFER.
Superintendent, Gas and Water Division, Public Service Company, Jeffersonville, Ind.

Borger, Texas

Present population	7,000
Population served	6,000
Number of active services	1,050
" " meters	1,192
" " hydrants	76
Miles of water main	15.4

The water rates for both domestic and industrial classes of service are:

First 2,000 gals. per month	$ .75 per 1,000 gals.
Next 8,000 " " "	.55 " " "
" 15,000 " " "	.45 " " "
All over 25,000 gals. per month	.40 " " "

Bills not paid in 10 days are subject to a penalty of 10%, and the minimum bill is $1.50 per month.

A special residential irrigation rate for six months' service furnishes water at $5.00 per 10,000 gals. per month, and all water over 10,000 gals. per month is billed at 35c per 1,000 gals. This rate carries a penalty of 10% in 10 days, and the minimum bill is $5.00 per month. The term of the contract is for six months, starting with the March billing.

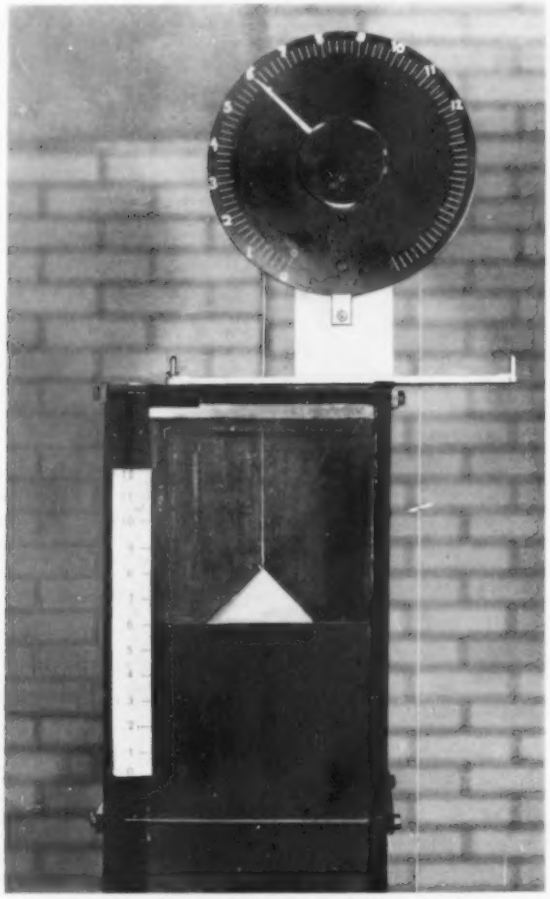
A second residential irrigation rate, which has a contract length of five months starting with the April billing, furnishes 5,000 gals. of water per month at $3.00, and all over 5,000 gals. is billed at 40c per 1,000 gals. The minimum bill is $3.00 per month, and the same penalty applies.

Under the rules and regulations of the company, the customer furnishes his own water service and pays the company $3.00 to cover the cost of tapping the main.

The city pays $40 per year for each fire hydrant plus a charge for all water used at 40c per 1,000 gals. There is no charge for automatic sprinklers other than for the water used. I do not know of any such installations in town.

C. R. BERRIEN,
Statistical Engineer, Panhandle Power & Light Co.

SIMPLEX



Sand Expansion Indicator in Action, showing 30% sand expansion. Note the dirt rising, and check of scale measure against indicator hand.

Sand Expansion Indicator

The Simplex Sand Expansion Indicator fills a long-felt requirement by providing an accurate measuring device whereby the degree of sand expansion required for optimum efficiency in operation can be determined and maintained.

Write for Bulletin No. 60.

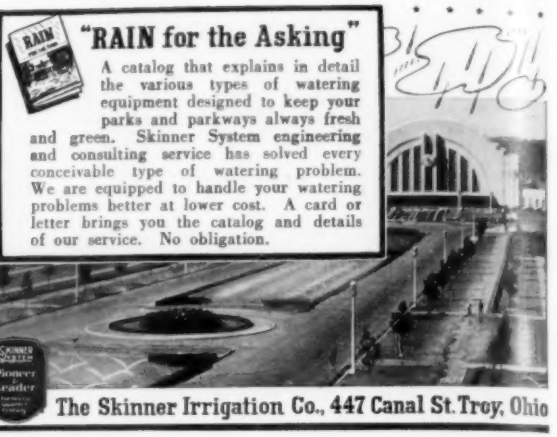
SIMPLEX
VALVE & METER CO.

6789 Upland St. Philadelphia, Pa.

Measuring and controlling equipment for water, sewage, power and industrial plants.

Water flow and water waste investigations.

Hydraulic specialties.



"RAIN for the Asking"

A catalog that explains in detail the various types of watering equipment designed to keep your parks and parkways always fresh and green. Skinner System engineering and consulting service has solved every conceivable type of watering problem. We are equipped to handle your watering problems better at lower cost. A card or letter brings you the catalog and details of our service. No obligation.

The Skinner Irrigation Co., 447 Canal St. Troy, Ohio

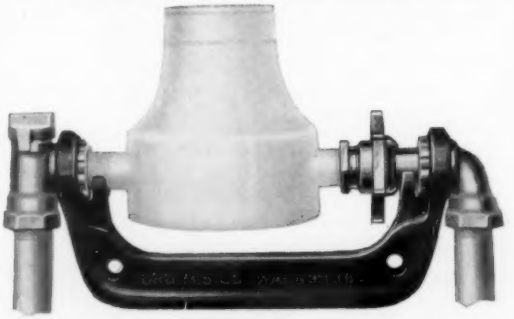
ALL TYPES ROOT DRAGS, BUCKETS, SCOOPS, etc.

Send for Catalog

Everything in Sewer Cleaning Equipment

TURBINE SEWER MACHINE CO., INC.
5210 W. State St. MILWAUKEE, WIS.

Ford YOKES



Ford Yokes have been made for over twenty-five years and have features which make them preferred in many hundreds of progressive waterworks. Let us give you further information about what Ford Yokes will do for you.

Ford Meter Box Co.

SETTING AND TESTING EQUIPMENT FOR WATER METERS
WABASH, IND., U.S.A.

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives, and Others

Setback Lines in Oregon Municipalities

PORTLAND, ORE.—Orderly and economical development of streets in municipalities of Oregon has been made possible by the passage of an act authorizing cities or towns to establish building setback lines for indeterminate periods. The act, introduced in the Fortieth Legislative Assembly as House Bill 219 at the request of city planning interests in Portland, was signed by Governor Charles A. Sprague, March 13, 1939. The bill was strongly supported by the City Club of Portland.

The act provides that the governing body of any incorporated city or town in Oregon may, under the exercise of its police power, establish or alter building setback lines on property adjoining any public way and may provide penalties for the unlawful disregard of such lines when established.

Prior to the passage of the new law, municipalities could establish setback lines only under their power of condemnation, which had been interpreted to mean that the city must condemn and pay for, within a reasonable time, the property necessary or convenient for the street widening. Such restrictions made rational city planning impossible, since no city could afford to pay for all the property needed in a long-term program of street improvement at the time a plan was adopted.

The new law further provides that existing buildings need not be torn down at the time the setback line is established. Power of eminent domain is exercised, existing buildings are torn down, and damages paid only when the actual street widening occurs.

While the new law was being considered by the Legislature, Portland on February 25 took its first major step in 25 years toward adopting a master street plan by designating some 21 major traffic arteries as the official master plan. Under the new state setback law, the City Council will next consider the establishment of setback lines on the streets named in the master plan, and then proceed to add streets to the plan as surveys by its Bureau of Traffic Engineering indicate need for more traffic arteries.

C. HERALD CAMPBELL,
Executive Secretary, The City Club of Portland.

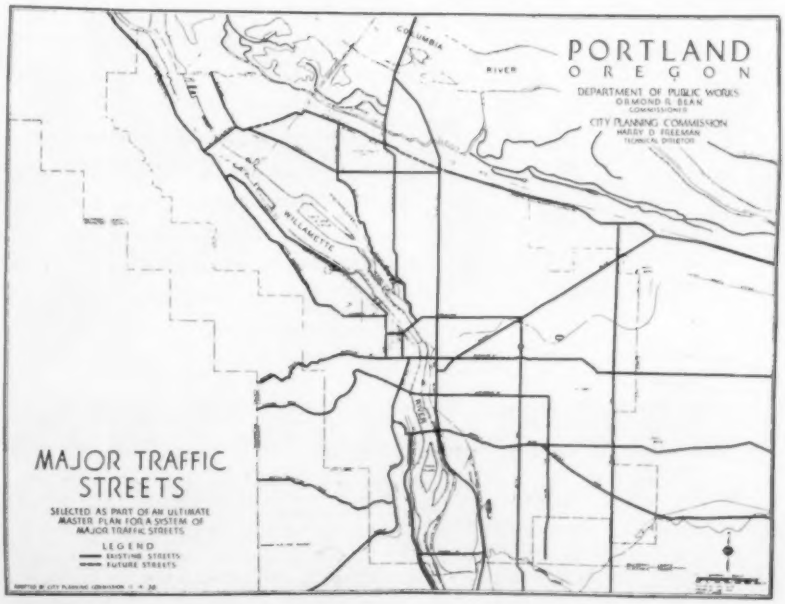
Bypass and Shuttle Routes Planned, Harrisburg Area

HARRISBURG, PA.—We have been accustomed to thinking of the normal highway pattern within a metropolitan area as comprising a group of roads which radiate out from the center of urban development, with perhaps one or more bypass roads as incidental appendages along the outskirts. Thus all, or most, through traffic tends to be directed into the heart of a city and out again, contributing its share to downtown congestion, its own continuous progress having been considerably delayed. Is it not more logical to think of a system of bypasses, skirting a metropolis, as forming essential parts of the primary highway system, with other routes to and through the heart of the city as connecting links, and to give them route designations accordingly?

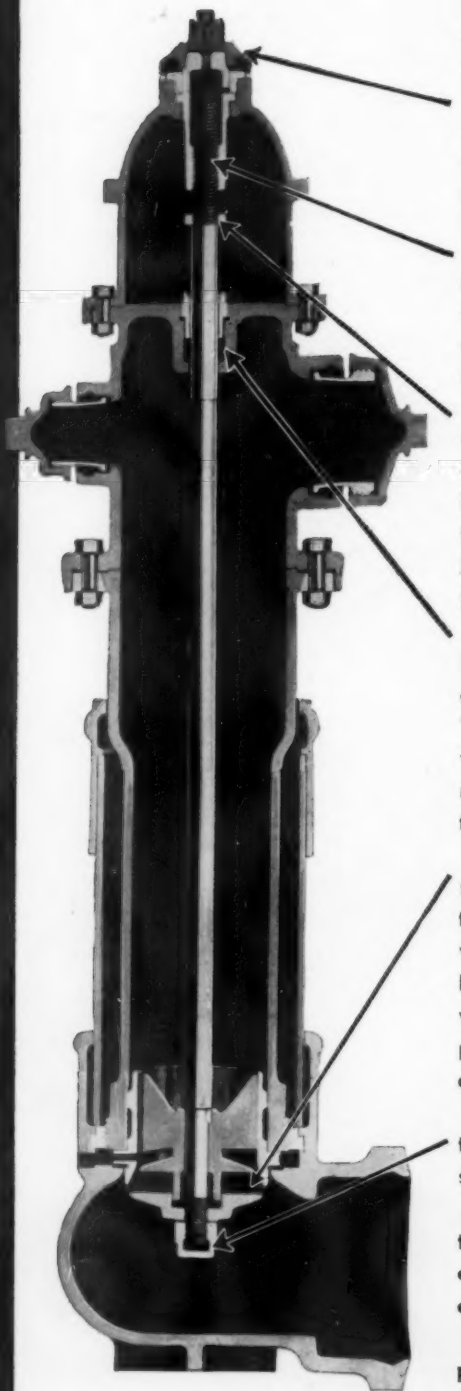
In accordance with this view, the Harrisburg Area Regional Planning Committee has worked out a tentative plan for future reroutings of the six U. S. highways in the metropolitan district. Noted also are what might be called shuttle routes, serving both to interconnect the bypassing highways, and to provide connections between them and the urban and suburban centers. Some of these highways are existing; others, proposed. Naturally, it will take years, and a considerable expenditure of funds, to complete the whole system of relocated routes, but the important thing is to recognize the principle involved and to have a master plan agreed on as a working basis.

In general, bypassing of the city and its suburbs has been aimed at by seeking undeveloped locations along the river banks, or through uplands outside urban development. In one case, however, involving relocation of U. S. 322 and 422, the route proposed calls for an elevated structure along the concreted channel of Paxton Creek, through the heart of Harrisburg for two miles, and then on grade again, along the route of the old Susquehanna Canal to a junction with the River Road, which now carries five U. S. routes. Two of the latter, U. S. 11 and 15, will be relocated along the west shore of the river after completion of improvements now pending.

With a metropolitan population in 1930 of 162,000, giving it a rank of 67th among 96 metropolitan districts in the United States, Harrisburg was 19th as regards the number of its adjacent incorporated communities. There are at least 75 agencies, local, state, and Federal, which are in some way involved in matters pertaining to planning. Whatever advantages there may be in the retention of separate community identities within a metropolitan area, there can be no question as to the necessity of unanimity in the *planning* of the whole urban constellation. The Harrisburg Area Regional Planning Committee was organized in June, 1938, by a group of public-spirited citizens who recognized the urgent need of coordinated planning for their locality. Working with them are consultants as needed, and a resident regional planner. It is hoped that accomplishments of the Committee over a reasonable length of time, as to both



Take a trip with us down the Mathews Stem



No other hydrant stem is built quite like the Mathews stem. As a result, no other hydrant performs quite so well as the Modernized Mathews.

Start at the top. Note that when you operate a Mathews, you don't even touch its stem. An easily replaceable, waterproof shield operating nut takes all wrench wear.

The internal bronze revolving nut turns with the operating nut, but the stem does not turn. It simply moves down or up as the operating nut revolves.

Now notice the bronze stop nut at the base of the thread. It stops downward travel of the hydrant stem before its lower end strikes the bottom of the elbow. This prevents buckling of the stem if excessive pressure is applied.

Next comes the stuffing box. Notice its simplicity — screw type — easily adjusted — no bolts to rust or break. The stem is bronzebushed to prevent wear on the packing. Water does not pass this point to freeze or rust the operating threads.

Now down to the main valve. The stem moves this valve down against the water pressure to open, and up with the pressure to close. If the hydrant is smashed above ground, water pressure keeps it closed, to prevent flooding and consequent damage.

Finally, a bronze cap nut protects the end of this genuine wrought iron stem from rust and corrosion.

Long-lived, free from strain, easy to operate — yet completely and easily removable along with all other operating parts as a unit.

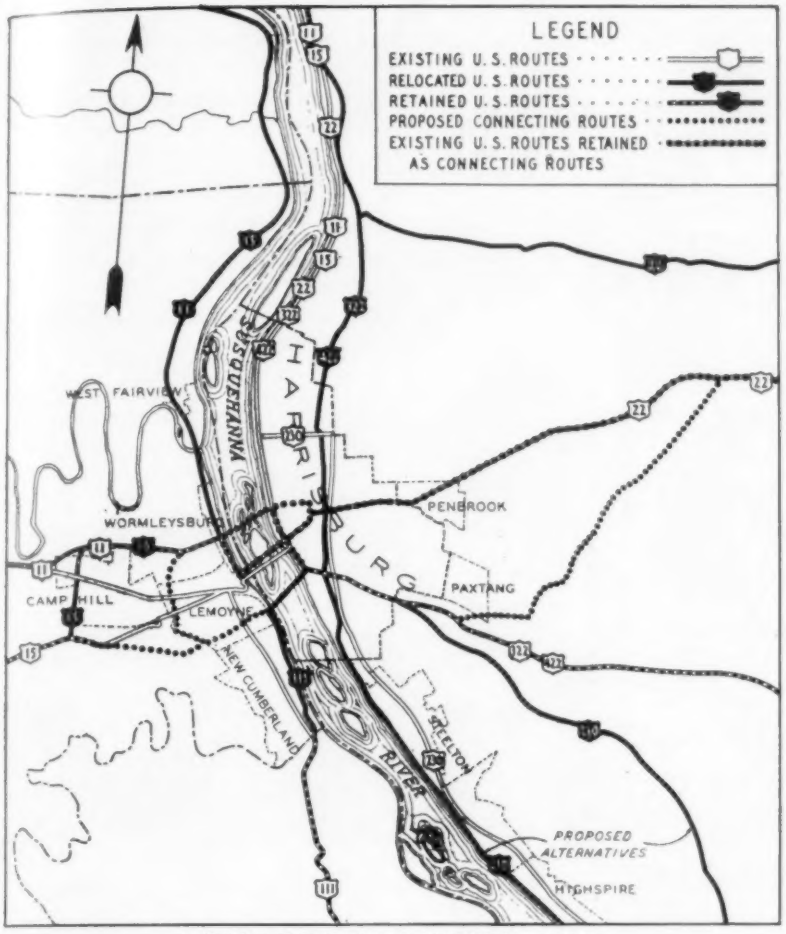
Specify Mathews. It has built-in protection against failure and maintenance expense.

MATHEWS HYDRANTS

Made by **R. D. WOOD COMPANY**

Manufacturers of Sand Spun Pipe (centrifugally cast in sand molds) and R. D. Wood heavy-duty gate valves for water works

400 CHESTNUT STREET, PHILADELPHIA, PA.



TRAFFIC ROUTES IN THE HARRISBURG AREA

correlation and initiation of planning problems, may be sufficiently impressive to convince the various communities and political units within the Area that a permanent official Regional Planning Commission is essential.

MALCOLM H. DILL,
Regional Planner.

Would You Make a Good Policeman?

THE Police Manual of the Chicago Park District stresses the importance not only of alert action, but of always explaining to the suspect or the public what the action means. In like manner, when the Manual instructs the officers, it gives explanations.

Personal appearance and well-fitting, snappy-looking uniforms are powerful factors not only in expressing morale but in maintaining it and influencing conduct. Another factor is the relative esteem in which the uniform is held by the civil population. Show by the manner in which you wear the uniform that you are proud of it and all that it signifies.

The greatest asset of a police force is not the buildings or the motor vehicles, but the personnel. Personality, brains and ability have made possible the success of police business and the elevation of the force.

Courtesy is a quality that costs nothing and is usually returned. Therefore, courtesy and tactfulness in approaching people, and consideration of personal rights, will insure better service to the public.

Grade yourself, and have two other persons grade you by following the 20 qualities, and see if you rate 65 per cent.

	Per Cent
1. Pleasing personal appearance	
2. Pleasing facial expression	
3. Steady eyes	
4. Steady voice	
5. Steady poise	
6. Courtesy and friendliness	
7. Tact and diplomacy	
8. Intelligent conversation	
9. Open-mindedness	
10. Concentration	
11. Interest in people	
12. Observation	
13. Complimentary attitude	
14. Confidence and conviction	
15. Decision	
16. Responsibility and dependability	
17. Self-control	
18. Sincerity	
19. Enthusiasm	
20. Optimism and cheer	
Total	
Divide total by 20	

The factors used in determining the efficiency of a policeman are as follows:

A. General neatness and appearance.
B. Intelligence in making reports.
C. Intelligence and success in presenting cases in court.
D. General carriage of the individual while on duty, whether alert and active or slovenly and careless.
E. Efficiency of patrolmen in observing and reporting matters of importance to other departments, such as broken pavement, street-lamp outages.
F. Punctuality.
G. Discipline.
H. Reporting of suspected gambling and disorderly houses and other irregularities.

Letters to the Editor

Correction in Report on Typhoid in Indiana

To the Editor of THE AMERICAN CITY:

I have read with considerable interest your report of Indiana's Mayfair Chateau typhoid outbreak of 1938 which appears on page 11 of the March issue of THE AMERICAN CITY. While your general comments on this outbreak are correct, some of the details which appear in the last paragraph are in my opinion sufficiently erroneous to merit correction. I refer particularly to the statements that the sewer was 5 feet from the well, that the Inn was closed, that the sewer was repaired, the well sampled, and upon a showing of safe water the Inn was permitted to reopen.

This outbreak was called to our attention on the 28th of April by the local health officer. His investigations had led him to suspect the well, and he had ordered the restaurant to cease using water produced by this well before calling the outbreak to our attention. The management immediately complied with his orders. Subsequent investigation by our engineers showed that a 2-inch well which was equipped with a deep-well pump supplied water for the establishment. This well was finished in a pit, although the pump was located at ground elevation. The building sewer, which was constructed of vitrified tile with cemented joints, passed within 2 feet of the walls of this well pit. It is known that the well pit was subject to flooding, and rainfall records indicate it was probably flooded on April 1, 1938. It was demonstrated by the use of fluorescein that leakage from the sewer entered the pit and that the pit contents could be drawn into the discharge pipe through the mechanism which injected air into the discharge line.

Inasmuch as the Inn was serving potable water at the time we began our investigations, it was never closed. However, the existing toilet rooms and the sewer, septic tank and absorption system were all abandoned and removed and a new system constructed in an area which was well isolated from the water supply. The well casing was extended above ground and the well pit filled and tamped. As an added precaution, chlorination facilities were provided. In addition to this, chloride of lime was used generously in the trench which had contained the old sewer.

As stated earlier, I believe your article

1. Clean the flange.

2. Measure the diameter.

3. Cut length of TAPAX needed.

TAKING THE **BANG** OUT OF MANHOLE COVERS WITH

TĀPAX

Quick - Easy - Lasting

TAPAX is the surest relief from rattling, banging manhole covers and offers you the simplest solution for noisy covers at a cost of comparatively a few cents an application. TAPAX is a resilient cushioned composition of asbestos and bronze, shipped in convenient reels. It will "stay put" for years. Ask for sample.

4. Form it with hands.

5. Put TAPAX—sticky side down—on flange. Replace cover.

LET US SEND YOU A TRIAL ORDER REEL.

TAPAX MFG. CO., INC.
MAMARONECK NEW YORK

Los Angeles Park Dept. now

AUTOMATICALLY CONTROLS LEVEL IN STORAGE TANK

two miles from pumps

Watching the water level in a distant storage tank and automatically holding this level always between the safe high and low limits is a job which the Park Department of the City of Los Angeles is now successfully doing by means of a Bristol's Metameter.

The installation consists of the transmitter at the storage tank which transmits continuously, accurately, instantly water level readings to the receiver located at the pumping station two miles away. This receiver records every change in level. It also controls the pump motor.

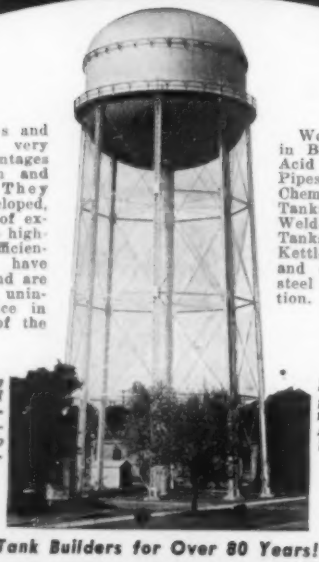
For installation details and further information, write for Bulletin 51-5S.

BRISTOL'S
TRADE MARK REG. U.S. PAT. OFF.

THE BRISTOL COMPANY, WATERBURY, CONNECTICUT

WATER LEVEL IN RESERVOIR MEASURED AND TRANSMITTED HERE
WATER LEVEL READINGS RECORDED HERE
TWO-WIRE TRANSMISSION LINE
POWER SUPPLY
METAMETER TRANSMITTER MOUNTED ALT AT RESERVOIR
RECORDING METAMETER RECEIVER IN PUMPING STATION OR IN ENGINEERS OFFICE

COLE
TANKS TOWERS



Cole Tanks and Towers offer very distinctive advantages in both design and workmanship. They have been developed, over 80 years of experience, to the highest state of efficiency. Hundreds have been erected and are giving perfect, uninterrupted service in every section of the country.

We also specialize in Boilers, Kiers, Acid Tanks, Stand Pipes, Smoke Stacks, Chemical Vessels, Oil Tanks, Air Receivers, Welded Pipes and Tanks, Monel Tanks, Kettles, Storage Bins and other forms of steel plate construction.

Our Engineering Department will be glad to cooperate and submit designs to meet any requirement.

Let us quote prices on tanks, towers or other steel products. Write for "Tank Talk" No. 6-A

Tank Builders for Over 80 Years!

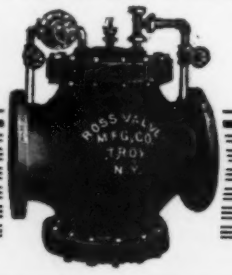
R. D. COLE MANUFACTURING CO.
ESTABLISHED 1854
NEWNAN GEORGIA

The Standard
for more than
50 Years

Automatic Pressure Control Valves
•
Feed Water Filters
•
Hydraulic Engines
•
Portable Fire Hydrants
•
Hydraulic Booster Pumps

ROSS VALVE MFG. CO., INC.

ARCHIBALD STREET TROY N. Y.



should be corrected, since it leaves the impression that the sewer was permitted to remain in service after repair and that nothing was done to the well pit. Public health engineers in general do not approve well pits nor do they condone sewers near a water-supply well.

B. A. POOLE,
Chief Engineer, Indiana State Bureau of Sanitary Engineering.

Repairs and Demolition of Substandard Housing in Toronto

To the Editor of THE AMERICAN CITY:

Apropos of an item entitled "When is Housing Unfit or Substandard?" on page 56 of the January issue of THE AMERICAN CITY, I enclose a copy of Toronto Rehabilitation By-law No. 14466, which was passed in February, 1936, and a memorandum showing what has been accomplished to date.

The by-law is administered by a committee of six heads of departments termed Housing Inspectors. These employ a number of field inspectors, office help, etc., who are making a systematic inspection of what appear to be the substandard areas in the city.

We have inspected nearly 8,000 buildings to date, a great number of which have now been made to conform at comparatively small expense, which has been borne entirely by the owners.

The work that is done is calculated to give these buildings a further fifteen or twenty years of useful life.

PROGRESS REPORT—BY-LAW 14466
Toronto, Ont.
Respecting a Standard of Housing in the City of Toronto

	Operation to Dec. 31, 1938 31 Months
Police Court action taken against owners and tenants	460
Stores	25
Factories	7
Service Stations	2
Dwellings found overcrowded	145
Dwellings in which overcrowding has been abated	142
Premises inspected to date	7,607
Owners notified to make repairs	6,328
Premises found satisfactory	716
Premises found satisfactory with minor exceptions	3,927
Premises on which work is proceeding	1,754
Premises on which work is completed	2,474
Dwellings demolished	631
Sheds demolished	802
Approximate cost of work done	$850,000
Loans sanctioned by City Council	42
Loans completed	15
Total amount of loans sanctioned	$8,160
Total amount of loans completed	$3,245
Summonses withdrawn or cases adjourned as work was started or premises vacated	293
Convictions	166
New buildings erected on sites made vacant by enforcement by By-law:	

It is anticipated that the inspection of areas will be continued for some years yet.

T. D. LEMAY,
Commissioner of City Planning.

No. 14466 A BY-LAW

THE TORONTO REHABILITATION BY-LAW

Recent City Manager Appointments

FRANK T. ADAMS, former Manager of Presque Isle, Maine, from 1933 to 1935, has been appointed City Manager of Ellsworth, Maine, to succeed Melvin F. McFarland.

Brian Brannon has been appointed City Manager of Troy and North Troy, Vt., to succeed John Campbell.

Robert Baumberger, a student of public administration from the University of Cincinnati, has been appointed first City Manager of Castleton, Vt.

M. C. Baker has been appointed City Manager of Lake Worth, Fla., to succeed C. A. McClain, who resigned because of ill health.

James M. Buckles has succeeded Edward Newton as City Manager of Kissimmee, Fla.

W. E. Brackett, City Manager of Middlebury, Vt., and former Manager of Washburn and Oakland, Maine, has been appointed first City Manager of Houlton, Maine.

L. E. Griggs has been appointed Town Manager of Hardwick, Vt.; L. S. Robie has been appointed Village Manager of Hardwick, to succeed Ira K. Fuller, who previously held both positions.

Walter F. Johnson, City Engineer, has been appointed first City Manager of Abilene, Kans.

G. Clifford Barlow has replaced George Kelly as City Manager of Warrenton, Ore.

W. M. Healy, former Manager of Largo, Fla., and Logan, W. Va., has been appointed first City Manager of Welch, W. Va.

Roy R. Hislop has been appointed City Manager of Phoenix, Ariz., to succeed M. L. Wheeler.

J. N. Neelly has replaced Fred R. Williams as City Manager of Pawhuska, Okla.

Alfred McDonald, Park Superintendent, has been appointed City Manager of Wichita, Kans., to succeed Bert C. Wells, who resigned on April 10 after 12 years of service.

William R. Woodbury, City Manager of Altavista, Va., has been appointed first City Manager of Harrisonburg, Va.

S. H. Hampton, of the Flint Engineering Department, has been appointed first City Manager of Davison, Mich.

CLARENCE E. RIDLEY,
Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from April numbers of *The Bond Buyer:*

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$220,000	Fairfield, Conn., New Fiscal Year, Series of 1939	1.25	1-10 Ser.	1.23
130,000	North Adams, Mass., School	1.75	10 Avg.	1.63
275,000	St. Paul, Minn., Public Welfare	1.70	5.66 Avg.	1.65
250,000	East Hartford, Conn., Flood Control	2	13.58 Avg.	1.82
600,369	Springfield, Ohio, Water-Works Mortgage Revenue	2.25	11.5 Avg.	2.13
1,114,000	Hudson Co., N. J., Nurses' Home	2.75	11 Avg.	2.73
200,000	Johnstown, Pa., Sanitary Sewer	3.25	6 Avg.	3.02
186,000	Camden Co., N. J., Power Plant	3.5	11 Avg.	3.34
234,000	Middlesboro, Ky., Sewer Revenue	4	20.5	4.
104,000	Wildwood Crest, N. J., General Refunding	4	13.33 Avg.	4.30

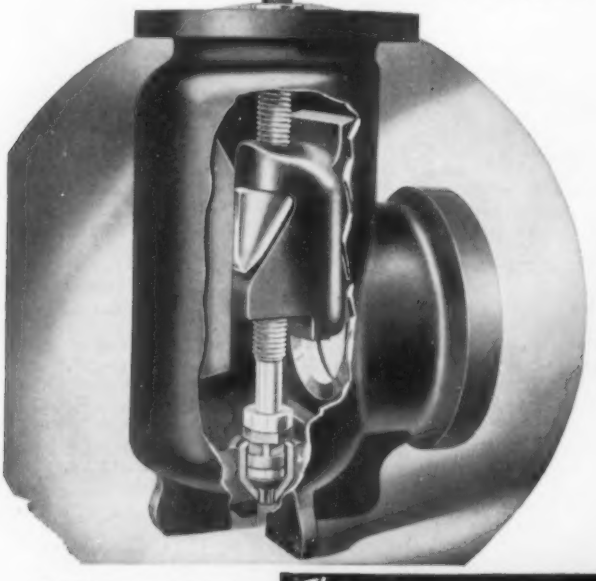
THE BEST Hydrant PROVIDES Quick Water WITH LEAST POSSIBLE SHOCK

A hydrant must have the capacity to provide *quick water*. The *best* hydrant does so with *least possible shock* through use of slide gate principle—*gradually* but rapidly releasing the stream to full force. In closing, water hammer is eliminated.

The best hydrant is also properly drained at lowest point; it will not flood when broken, because the gate is wedge-locked; it is *easily* inspected and serviced without unscrewing *anything* below the ground level.

Only the slide gate principle provides *all* these advantages. This principle, developed and perfected by Ludlow, has been the universally accepted construction in all *water works valves* for nearly three-quarters of a century. It likewise insures *complete security* in fire hydrants.

Information free on request.



When fully opened, face of gate lies directly against front of hydrant barrel protecting gate ring from injury and allowing unobstructed flow of water.

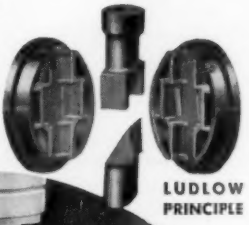
THE BEST Valve PROVIDES Smooth, Positive Operation

A valve must be so constructed as to allow smooth opening and closing with the least possible effort. To guarantee this effect, the best valve positions gates directly opposite ports before wedging, and entirely *unwedges* the gates before raising them.

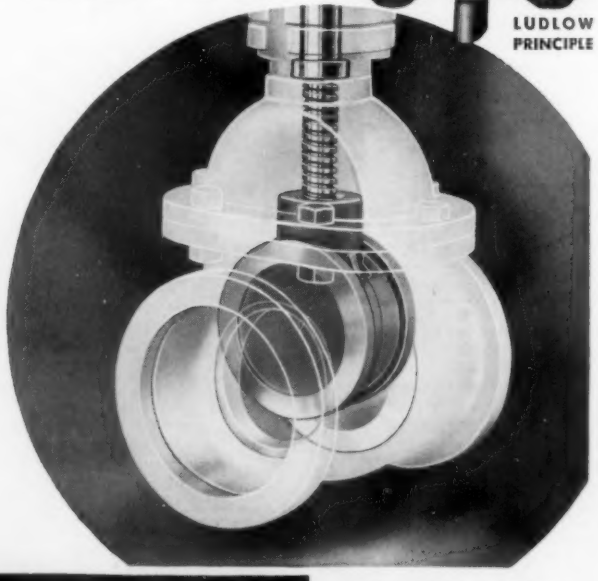
The best valve also cleans itself, allows ready replacement of parts through ample tolerances, and guarantees positive closure with self-releasing 30° angle wedges, and flexible-action gates *self-adjusting* to seats.

Only the parallel seat, double wedge type slide gate valve provides *all* these essential benefits. This principle, developed and perfected by Ludlow, has been the universally accepted construction in all *water works valves* for nearly three-quarters of a century.

Information free on request.



LUDLOW PRINCIPLE



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Safest-Traffic Cities in the Country

FOR going through the entire year of 1938 without a single traffic fatality, 157 cities with populations between 5,000 and 10,000 were placed today on the Honor Roll of the National Traffic Safety Contest. This marked an increase of 44 cities over the Honor Roll of the previous year, the Council said.

Each of the cities will receive a certificate of commendation in recognition of its outstanding work in the traffic safety field. A total of 1,163 cities and 48 states were entered in the various divisions of the Contest.

The Honor Roll cities are:

ALABAMA
Lanett

ARIZONA
Nogales
Miami
Bisbee

ARKANSAS
Van Buren
Hope

CALIFORNIA
Santa Maria
Piedmont

COLORADO
Longmont
Sterling

FLORIDA
Sarasota
Fort Myers

GEORGIA
College Park
Milledgeville

IDAHO
Idaho Falls

ILLINOIS
Lombard
Murphysboro
Taylorville
Riverside
Naperville
Lake Forest
Mt. Carmel
Normal
Downers Grove
Clinton
Monmouth
Gillespie
Villa Park
Wood River
St. Charles
Pontiac
Glencoe
Venice
Spring Valley

INDIANA
Sullivan
Kendallville
Columbus
Lebanon
Plymouth
Auburn
Hartford City
Valparaiso

IOWA
Centerville
Grinnell
Spencer
Cedar Falls
Fairfield
Carinda
Atlantic
Perry
Shenandoah
Red Oak
Chariton

KANSAS
Garden City
Ottawa

KENTUCKY
Glasgow

MARYLAND
Frostburg

MASSACHUSETTS
Northridge
Amherst
Spencer
South Hadley

MICHIGAN
Grand Haven
Hancock
St. Joseph
Petoskey
Marshall
Coldwater
Manistee
Mt. Pleasant

MINNESOTA
Crookston
Fergus Falls
Fairmont
Eveleth
International Falls

MISSISSIPPI
Tupelo
Corinth

MISSOURI
Washington
Nevada
Marshall

NEBRASKA
Fairbury
Alliance
Falls City

NEW JERSEY
Highland Park
Ventnor City
Princeton
Bogota
Metuchen
Guttenberg
Paulsboro

NEW YORK
Larchmont
Bronxville
Ilion
Tupper Lake
Scarsdale

NORTH CAROLINA
Lexington
Tarboro

NORTH DAKOTA
Devils Lake
Mandan

OHIO
Shelby
Mt. Vernon
Conneaut

OKLAHOMA
Elk City
Cushing
Duncan
Henryetta
Miami
El Reno
Altus
Holdenville

OREGON
The Dalles
Corvallis

PENNSYLVANIA
Tarentum
Rankin Borough
Monongahela
Borough of Avalon
Blairsville
Emmaus
Palmerton
Nazareth
St. Marys
Huntingdon
Wilmerding
Middletown
Ennis
Greenville
Jersey Shore
Ford City
West View

SOUTH DAKOTA
Lead

TENNESSEE
Alcoa
Dyersburg

TEXAS
Kingsville
Waxahachie
Mission
Victoria
Lufkin

UTAH
Tooele

VIRGINIA
Hampton
Waynesboro

WASHINGTON
Centralia
Anacortes

WEST VIRGINIA
Williamson
Welch
Hinton
Grafton
Princeton

WISCONSIN
Rice Lake
Oconto
Waupun
Merrill
Monroe
Antigo
Fort Atkinson
Neenah
Portage

WYOMING
Sheridan
Rock Springs

In the larger population groups, Cleveland and Milwaukee tied in the over-500,000 group; Providence won the national grand award in addition to having the best record in its 250,000 to 500,000 group; then Saginaw, Mich. (50,000 to 100,000), Waukegan, Ill. (25,000 to 50,000), Mason City, Iowa (10,000 to 25,000).

New Jersey won the grand award for states as well as first prize in the Eastern States division,, largely because of a remarkable reduction in traffic deaths in spite of carrying heavy volumes of interstate traffic in addition to its own local traffic.

Oklahoma won in the Southern division, Iowa in the Midwestern, and Washington in the Western division.

19 *Traffic Fellowships Given at Yale*

THE Bureau for Street Traffic Research, Yale University, announces the availability, beginning September 26, 1939, of 19 graduate fellowships made possible through a grant from the Automotive Safety Foundation and from Alfred P. Sloan, Jr.

Their purpose is to encourage particularly promising young men to enter the field of traffic engineering, or to assist those who hold positions with organizations having authority and responsibility for traffic control.

The fellowships provide a stipend of $800 disbursed at the rate of $100 per month for eight months, and a tuition fee of $400. In addition, special funds are available for scheduled field investigation while in attendance, up to a maximum of $200. These fellowships may be applied for by persons having the following qualifications:

(A) Applicants must be not more than 35 nor less than 23 years of age.

(B) Applicants must have an engineering degree representing four years' work in an accredited college or university.

(C) Preference will be given to men who have had:

(1) From one to five years of practical experience in a public engineering or administrative organization where they engaged personally in some phase of traffic engineering;

(2) Exceptional grades during their college courses;

(3) In addition to their engineering course, courses in Planning, Government, Public Administration, Economics, Public Speaking, Psychology, Sociology, Philosophy, Physiology, Mathematics, and Statistics.

Apply to Maxwell Halsey, Associate Director of the Bureau for Street Traffic Research, Room 315, Strathcona Hall, Yale University, New Haven, Conn., for application forms.

More About the Fort Wayne Housing Experiment

IN the May *Survey Graphic*, Loula D. Lasker has a keen analysis of the Fort Wayne-FHA Housing Plan and a discussion of its defects. The concluding paragraph of this two-page illustrated article reads:

"That we are on the threshold of discovering great technical economies and improvement there seems to be no doubt; Fort Wayne has taken advantage of some of these already existing. But, regardless of their well-intentioned effort, prefabrication cannot yet be looked on as the White Hope of Housing; and the Fort Wayne experiment must not be allowed to evolve into a countrywide solution, or we may find when it is too late that it is as expensive to re-slum as to de-slum our cities."

Readers of Miss Lasker's article may wish to consult Charles Abrams' discussion of the Fort Wayne Plan in the April issue of THE AMERICAN CITY (page 105). Since publication of this issue, Mr. Abrams has discovered an error in his manuscript to which attention should be called. In the comparison of rents under the Fort Wayne Plan and the USHA Plan, the figures are for rents per *unit* per month and not per *room* per month.

The Fort Wayne Plan is also the subject of a critical article in *The Nation* for April 29, by Beryl Gilman, Director of Public Relations of the Federation of Architects, Engineers, Chemists and Technicians, of which the following is the concluding paragraph:

"The Fort Wayne Plan is a plan for creating trailers without wheels. Aside from instituting an unheard-of system of land speculation by hogtying housing to it, it is a plan to obtain private profit from public subsidy. The plan clears no slums and rehabilitates no neighborhoods. It plays little or no part in the stimulation of the building industry. It creates a system whereby houses can now be dispossessed as well as tenants. Will it also grow into a plan to cheat American families out of housing?"

The article quotes Senator Wagner as pointing out that the $900 figure for the Fort Wayne houses is based partly on concealed government subsidies, and that if land costs, labor, capital charges, technical services, etc., were added, the so-called $900 house becomes about a $2,400 unit.

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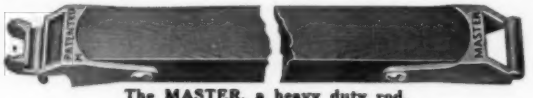
The REGULAR, a light rod,
Fir stock 1¼ x 1¼ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



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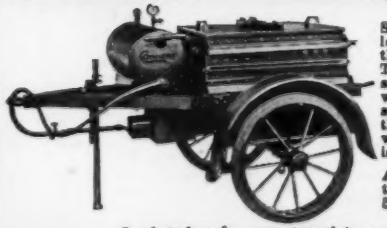

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Correcting Los Angeles Traffic Snarls

By E. B. LEFFERTS

Automobile Club of Southern California, Los Angeles, Calif.

THE Los Angeles Metropolitan Area includes 43 incorporated cities lying between the Pacific Ocean and the San Gabriel Mountains, and at one point is only 20 miles wide. Through this stricture passes the majority of north- and south-bound traffic destined for points throughout the state. In this area reside nearly 2¾ million people, with one automobile for every 2.8 persons—the most densely motorized area in the world.

Pedestrians in these Metropolitan-Area municipalities are famous for their observance of traffic signals, with the result that the ratio of pedestrians killed to the total number of persons killed in traffic is notably lower than in other cities with about the same population. Utilization of pedestrian subways under heavily traveled arteries for the protection of school children also is recognized as a factor in the low ratio of pedestrian deaths in this metropolitan area.

In general, the traffic accident problem in Los Angeles City and other cities in the Metropolitan Area is much the same as that existing throughout the

TRAFFIC ACTION IN METROPOLITAN AREA OF LOS ANGELES, CALIF.

Upper left—Off-street parking facilities provided by stores outside the central business district apparently have encouraged decentralization. Upper right—Channelizing islands at intersections is one means of controlling traffic. Lower left—Composite photograph depicting motorway bridge over major business street. Lower right—A grade separation is planned at this congested intersection

MATHIESON *HTH* FOR SAFE BEACHES

Says George R. Young, Village Manager, Village of Glencoe, Illinois: March 7, 1939

"You will be interested in our successful use of HTH on our Lake Michigan Beach . . . Two problems were involved: foot infections from the bacteria in the sand, and insects . . . HTH was tried, using a 2% solution. We were able with this solution sprayed on the sand to reduce the fly egg count from 800 per square inch to almost none. We eliminated bacteria and foot infection completely, so far as we were able to determine. We feel that the added satisfaction and confidence inspired in our Glencoe residents who use the beach was well worth while . . . In the past ten years we have enjoyed excellent service from your company."

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• *Filtration Plant Glencoe, Illinois Waterworks*

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HTH is a dry, free-flowing chlorine carrier. 70% of its weight is chlorine available for killing bacteria and destroying odors and other objectionable contamination. Its germ-killing power is released rapidly, uniformly—requires no bulky equipment, no specially expert or experienced operator. Best of all HTH really does the job.

Glencoe is only one of the many villages, towns and great cities throughout the country that have found in HTH and Mathieson Chlorine the ideal solution of the problem of water purification, sewage treatment, beach and pool sanitation.

Mathieson Chlorine means a pure, dependable product — safe, trouble-free containers and valves — prompt delivery service. In addition you have available the full cooperation of Mathieson's expert technical staff.

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LIQUID CHLORINE . . . HTH . . . SODA ASH . . . CAUSTIC SODA . . . BLEACHING POWDER . . . BICARBONATE OF SODA . . . AMMONIA, ANHYDROUS and AQUA . . . PH-PLUS (FUSED ALKALI) . . . DRY ICE . . . LIQUID CARBON DIOXIDE . . . GYPSUM PRODUCTS

country, and is being controlled as far as possible by signs, signals and markings. Analyses of traffic deaths reveal that a surprisingly large percentage of the traffic deaths occur on a small percentage of the total mileage of streets and highways. In the city, for example, 38 per cent of the total deaths, 202 lost lives in one year, occurred on only 125 miles of streets and highways. Marked progress can be made by focusing attention and corrective action on this proportionately small mileage. The unusually good accident history of thoroughfares on which coordinated traffic-signal systems have been established, and which have better than average street illumination, has shown forcefully the necessity for equipping other streets and highways with these traffic regulatory and safety devices.

The effect of increasing congestion on automobile transportation was measured during the course of a recent survey by determining the time required to drive from one point in the area to other points, and the results were compared with checks made between the same points in 1930. This study revealed that mounting congestion, from the standpoint of time, slowly but steadily is pushing the various communities farther and farther apart. Decentralization of the concentrated business district apparently is occurring in the city, and those studying the subject believe this is due primarily to the congestion of traffic with many attendant annoyances, hazards, and economic losses. The need for greater street space for moving traffic is apparent. Acquisition of property to allow widening of streets in densely built-up business districts is of course prohibitive financially.

Utilization of planes other than the surface plane for passage of traffic is submitted as the only other method of providing additional ways for traffic in heavily built-up areas. The plane above the surface has been found more satisfactory. A network of thoroughfares called "motorways" has been proposed for the Metropolitan Area of Los Angeles. These thoroughfares are to have a right-of-way of 360 feet through residence districts and 100 feet in business districts. A dividing strip, presenting a physical barrier between streams of traffic traveling in opposite directions, is recommended throughout the length of the motorways. All crossings at grade are to be eliminated, with cross streets carried either under or over the motorway. At intersections of motorways, or of motorway with major streets, cloverleaf grade separations are planned, which provide for a transfer of traffic from one street to another by right turns only. In outlying areas the motorway will be constructed on the surface, and advantage will be taken of topographical conditions and features of the land to provide grade separations at relatively low cost.

In densely built-up business districts it is planned to acquire rights-of-way in or near the middle of the block. Motorway buildings are proposed on this land to serve retail business and to provide parking and office space. Under this system traffic on the motorways would pass above surface streets on bridge structures connecting motorway buildings. Transfer from the motorway to the surface street would be provided at convenient intervals.

The survey concludes that the motorway system will aid greatly in anchoring business districts as well as increasing property values, in addition to raising the efficiency of the automobile in densely built-up areas. A network of motorways serving the entire area of Los Angeles, it is believed, will minimize greatly the cost of motor-vehicle transportation and will enhance traffic safety. The savings effected through reduction of accidents and lower transportation charges on all commodities used within the area are calculated to compensate in a substantial measure for the relatively high initial cost of the motorway system.

Construction now is progressing on a roadway extending between Los Angeles and Pasadena utilizing a dry river-bed made possible through flood-control accomplishments that will embody principles of the motorway.

Motor-Vehicle Inspection Debated

By R. W. TUPPER
American Automobile Association

THE question, "Is compulsory periodic inspection worth the trouble and the cost?" was debated at the annual meeting of the American Automobile Association. Presenting opposite viewpoints on the question were Dr. H. C. Dickinson, Chief of the Heat and Power Division of the National Bureau of Standards, and William J. Dearden, Deputy Commissioner of Motor Vehicles of New Jersey.

Dr. Dickinson went at some length into the amount of cost and trouble that is involved in inspection. "The trouble can be estimated with certainty," he said. "For the twenty-five million cars there will be fifty million individual inspections each requiring the owner to meet some sort of a schedule or wait his turn at an inspection station. How much time will this take? Probably one hour might be a good guess at the time wasted by the average owner in meeting an inspection appointment. On this basis the total time lost by all the drivers in the process will be fifty million hours." He presented figures giving a comparison between states having inspection and states without inspection as to accidents which might be prevented by inspection. The records for the inspection and the non-inspection states were practically the same.

Arguing for inspection, Mr. Dearden pointed out that the traffic laws require that vehicles be equipped with proper brakes, lights, windshield wipers, and so on, and that periodic inspection is necessary if these regulations are to be enforced. Industrial accident prevention, he said, is due in large part to the careful inspection of machinery, and if stationary machinery requires inspection, surely there should be inspection of moving machines that pass each other within a few inches or feet at speeds from 40 to 50 miles an hour.

That motorists do not keep their cars in proper condition is evidenced by the large number of rejections at inspection stations because of faulty brakes, lights, or other vital parts, Mr. Dearden said. "In some cases it is pure neglect," he stated, "but in the majority of cases it is because the owner is not familiar enough with the mechanical parts of his car to know whether they are becoming mechanically unsafe."

He declared that in order to be worth the trouble and cost, inspection must be properly administered so as to avoid undue annoyance or delay. "We have thousands of letters in our file," he reported, "commending us upon the service being rendered by our stations, and particularly the conscientious, pleasant and polite manner in which the men at the stations have handled their jobs."

Pointing out that fatal accidents in New Jersey have been reduced by 30 per cent, he said: "To say this reduction is due to inspection would be folly. The credit for this reduction belongs to those who have caused it—the operators of motor vehicles. If, through inspection, they have been made more safety-minded, then, of course, we know that all other safety education has been a contributing factor. There is one particular type of accident, however, that we feel we can particularly credit to the inspection of motor vehicles. Rejections because of defective lights have been numerous, and corrections have been made. Pedestrian accidents have been reduced by 8 per cent, and we feel we can claim that this reduction is due to better lighting conditions on automobiles.

"Results of inspection will more than compensate for the trouble and cost. Inspection of automobiles is a progressive and necessary step in present-day administration."

See articles on Progressive Signal Systems—and Pedestrian Observance — and the list of Parking-Meter Cities The Municipal Index for 1939

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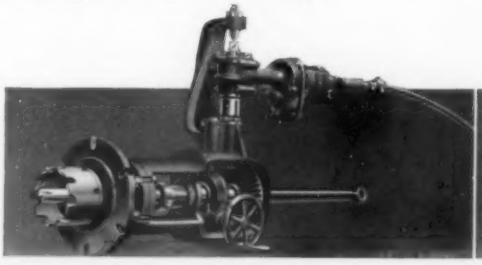

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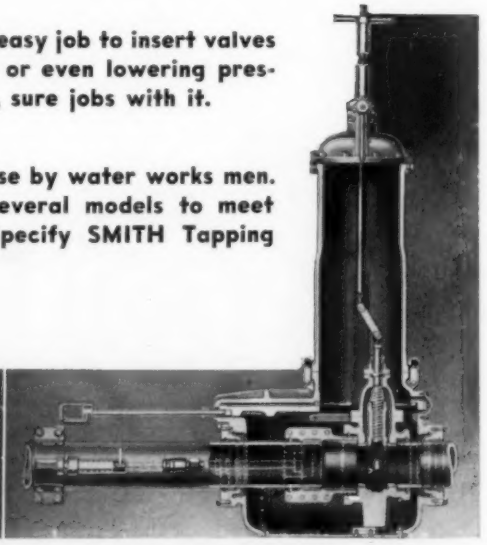

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Improving Municipal Administration

Current Items from the Public Administration Clearing House

Zoning for Large-Scale Housing in Restricted Residential Areas

GROWING demands for methods to permit development of large-scale housing projects within single-residence areas are challenging attention of many city plan commissions, the American Society of Planning Officials said recently. The projects include apartment houses and group houses of two or more family units.

Projects of this type have been barred from single-residence zones in the past because they usually disturbed zone uniformity. They frequently tower above neighboring homes, or lack yards and parking areas. Demands for their development increase, however, as the shortage of proper housing facilities becomes more acute.

Planning officials of several cities, believing that with proper restrictions such developments may be a credit to any residence zone, have cooperated with sponsors of the projects, the Society reported. The planning commissions have established standards of architecture and design which are acceptable under zoning regulations. The Chatham Village project in Pittsburgh, Pa., and similar developments in the vicinity of Washington, D. C., are examples of such projects, the Society said.

Spokane, Wash., when considering applications for large-scale projects, requires that the applicant file with the Plan Commission his architectural plans, showing in detail the interior and exterior design of the proposed structure. A description of proposed landscaping improvements and car-parking areas also must be filed. The wishes of residents of the neighborhood are consulted, and if the project is agreeable to them, the zone classification is altered to allow for construction of the project. It must be developed according to specifications that have been submitted to the Plan Commission.

Planning authorities have suggested two provisions which may be contained in zoning ordinance amendments permitting large-scale developments in single-residence areas. One would permit such developments if they furnish all the yard and parking facilities that would be required of an equal number of single residences; the other if architecture and design are satisfactory. Amendments of this type would not involve changing the zone classification of a particular property or area to allow for construction of a non-conforming building.

Although there is no uniform method for solving the problem, the Society said that a procedure which is legal with respect to the zoning ordinance, and which meets the needs of the community, is of major importance.

Four-Fifths of Cities over 5,000 Population Own Public Utilities

FOUR-FIFTHS of all cities of more than 5,000 population own some type of public utility, the International City Managers' Association reports in a survey of 1,797 cities. Ownership of one or more utilities was reported by all cities of over 200,000 population.

Ownership of water-works systems was reported by 1,249 cities, representing 72 per cent of the total. More than 800 cities own sewage-disposal plants, while 634 cities own their cemeteries, and 405 their airports. Electric light plants are owned by 259 cities. About 50 cities own gas works.

Only 16 cities reported ownership of street railways, including Detroit, Mich., Philadelphia, Pa., and San Francisco, in the 500,000 or over population class.

The greatest activity during the last year was shown in the provision of sewage-treatment plants, with 90 more cities reporting construction of such plants in 1938 as compared with 1937.

169 Cities of Over 10,000 Population Add New Municipal Services

AT least 169 American cities of more than 10,000 population added new city activities or services within the last year, a report by the International City Managers' Association states. Only 11 cities in this population class discontinued one or more regular activity.

Forty-six more cities reported sewage-disposal or sewage-treatment plants than in the previous year, including new plants at Columbus, Ohio, Buffalo, N. Y., Muncie, Ind., and Davenport, Iowa. Municipal refuse- or garbage-collection service was established in eight cities, and eight others acquired new water-works systems. Two cities purchased privately owned systems.

In the recreational field, swimming pools or bathing beaches were provided for the first time by eleven cities. New parks were established in seven cities, and recreation departments set up in seven more. Four cities constructed municipal stadiums. Colorado Springs, Colo., and Hastings, Nebr., set up city museums. Public libraries were established in four cities—Burbank, Calif., Campbell, Ohio, El Dorado, Kans., and Endicott, N. Y.

Three cities—Hopewell, Va., and San Angelo and Temple, Texas—created Health Departments. The Health Department in Wichita, Kans., provided for meat inspection service, and that of Sacramento, Calif., established a city venereal disease clinic.

Among the miscellaneous new services reported were police radio systems in four cities, water-purification plants in Ann Arbor, Mich., and Sandusky, Ohio, and City Planning Commissions in New York City and Chillicothe, Ohio.

Cincinnati, Ohio, established a Bureau of Traffic Engineering, and Fort Worth, Texas, set up a Bureau of Accident Prevention and Investigation.

Abattoirs were constructed in Griffin, Ga., and Tallahassee, Fla. Cedar Rapids, Iowa, built an incinerator, Charlotte, Va., set up a Welfare Department, and Quincy, Mass., established a Department of Purchase and Supplies. A number of cities established Housing Authorities, others installed parking meters, and several adopted the merit system.

The survey of activities has just been published by the International City Managers' Association in the 1939 Municipal Yearbook.

Advance Financing of Public Improvements

OREGON municipalities may lay up cash reserves to finance new public improvements under 1939 state legislation just passed, the Municipal Finance Officers' Association reports.

Enactment of the new law, which authorizes serial levies and sinking-funds for specific anticipated construction, adds Oregon to a small though expanding list of states making this provision during the last year or so, according to the Association.

California passed a law in 1937 permitting municipalities to set aside funds for capital improvements in advance of their purchase or construction. The cities of Topeka, Kans., Hartford, Conn., and Lincoln, Nebr., have been authorized by state legislatures to adopt the reserve fund plan of financing future improvements. Under its new charter effective in 1938 New York City may issue serial bonds for this and must prepare a separate budget for capital outlays.

Reserve funds for financing non-recurrent capital improvements are of special advantage to small municipalities, according to a forthcoming manual on local debt management by the Association. The plan is cheaper than borrowing, because it avoids interest payments. If it does not eliminate borrowing entirely, it reduces the amount of bonds and the term of years for which money would have to be borrowed.

The main danger, the manual points out, is that the fund is apt to be diverted from its original purpose and used for current purposes. Taxpayers, also, dis-

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like to contribute to something from which they do not yet benefit.

Both the California and the Oregon statutes provide protection against these dangers, according to the Association. The new Oregon law permits counties, school districts, cities and towns "to levy taxes serially to provide funds in advance for financing the cost of construction, reconstruction, improvement, betterment, repair or rehabilitation of public building and public works projects."

A majority of the electors of any municipality must approve the tax levy and set its term. In any event the term is not to exceed five years, and levies each year are to be alike. Funds from these taxes are kept separate from other funds and are to be expended only for the purposes for which they were created, unless conditions arise which, in the opinion of two-thirds of the governing body, make further accumulation unnecessary. At this point, the voters must approve transfer of the money to the general fund.

Smoke Nuisance Worse from Apartment Houses Than Factories

A SMOKE-CONTROL project to reduce a $10,000,000-a-year smoke-damage bill is under way in Cleveland, Ohio, the International City Managers' Association reports. The damage is caused by about 100,000,000 pounds of soot—100 pounds per family—entering the Cleveland atmosphere annually, according to a recent survey.

The survey has shown, so far, that steel mills and other industrial plants in a given area are less serious offenders in the matter of excess smoke than are apartment houses. The large industrial plants employ technical experts to see that their fuel is used efficiently, while most apartment houses and small factories do not follow this practice, the survey points out.

Extra expenditures of about $2,600,000 a year for cleaning of clothes, curtains and draperies result from this smoke nuisance, according to city and Works Progress Administration smoke technicians cooperating in the project. In addition, soot obscures the sun's rays, and destructive gases in the smoke stunt or kill trees, grass and foliage.

The smoke-abatement program first involves determining the amount of smoke and soot expelled by furnaces, industrial plants and mills; the inspection of heating, power and incinerator units to determine the type of equipment used; the size of smokestacks, and the gathering of information as to kinds of fuel used and the manner of stoking.

Upon completion of the survey, civic authorities plan to form a smoke-abatement association. Smoke-ordinance violators will be urged to comply with abatement regulations, and owners of furnaces and other heating units will be instructed in the best methods for avoiding excessive smoke.

Several other cities, including St. Louis, Mo., New York City, Pittsburgh, Pa., Indianapolis, Ind., and Chicago, Ill., are making or have made smoke surveys or air-pollution studies. In St. Louis, information gathered to determine the number and classification of buildings equipped with heating appliances is used to help enforce a new city smoke-abatement ordinance.

Pittsburgh, in a drive against the smoke nuisance last year, enlisted the cooperation of its citizens. Dairy company employees delivered to 100,000 homes a questionnaire relating to personal health histories which might reveal respiratory ailments caused partially by the smoke-laden atmosphere. At the same time, a survey similar to that of Cleveland was made.

20-35 *Per Cent Coverage Advocated for Large-Scale Housing Projects*

THE importance of treating large-scale housing projects as new "neighborhoods" that are to be integrated into the community is pointed out in a report issued today by a committee of the National Association of Housing Officials in collaboration with the American Public Health Association. The report, on physical standards for large-scale housing, deals with site selection and development, dwelling plans, design of structures, dwelling equipment and housing hygiene.

Plans for such projects, to be built by either private or public agencies, "should relate the houses and other facilities to the existing and prospective neighborhood development," the report says. In choosing a site, "the agencies should consider whether the location will provide ample open area and be satisfactorily related to schools, recreational facilities and transportation, and will make use of existing urban utilities and services." They should also select a location which "will not suffer from nuisances incidental to industrial developments." To meet these objectives, consultation with city planners, architects, housing managers and welfare officials is advised.

The report considers building coverage and height with respect to site development. "At the present time, 20 to 35 per cent coverage of land within property lines appears to give the result desired. Coverages below 20 per cent are likely to put an excessive cost on the project for utilities and maintenance of grounds. Coverage exceeding 35 per cent may fail to provide sufficient desirable open space."

General specifications for organizing the space in dwelling plans for the project, with reference to room sizes, privacy, air circulation and other factors are listed in the report. Under design of structure, the factors of safety, durability, flexibility and livability are outstanding considerations. Standards for heating and ventilating, plumbing and electrical installation are included in the discussion of dwelling equipment.

The purpose of the report is to present the objectives of "good housing anywhere." Exact methods of attaining these objectives are left to local groups and agencies. The committee declared that "the design of large-scale housing projects should not be frozen by any arbitrary set of rules."

A. C. Shire, Technical Director, United States Housing Authority, is chairman of the committee, and Henry S. Churchill, architect, New York City, is secretary.

A Report of a Survey on Municipal Employees

THE fact that it takes more employees per 1,000 population to provide governmental service in larger than in smaller cities is shown by a survey of 777 cities of over 10,000 population conducted by the International City Managers' Association. Cities of between 10,000 and 30,000 population employed 8.6 persons per 1,000 population in 1938, while cities of 500,000 or more population employed 13.4. The survey covered all employees except for schools.

Non-resident appointments to municipal posts increased from 236 for 74 cities in 1937 to 352 for 75 cities in 1938. Cincinnati led the list, as it did in 1937, with 125 appointments. This city appointed 77 non-residents in 1937. Among other cities which appointed "outsiders" to city posts were Berkeley, Calif.—71, Rochester, N. Y.—15, Peru, Ind.—14, Sacramento, Calif.—8, and Dennison, Texas—6. Thirty-six of the 75 cities were council-manager cities, which accounted for 280 of the 352 appointments.

This increase in non-resident appointments, the Association said, may be considered a significant indication of the extent to which a career service is being established in municipal government.

The results of the survey, which covers also the salaries of municipal employees, has just been published in the 1939 Municipal Year Book.

Washington Revokes 2,300 Driving Licenses for Drunkenness in Two Years

THE drivers' licenses of 2,300 motorists in the state of Washington have been revoked for drunken driving since 1937, when revocation became mandatory under the law, the International Association of Chiefs of Police reports. The total is 300 more than in the previous two years, when revocation was optional with the court.

No actual increase necessarily occurred in drunken driving, according to the State Director of Licenses, but there was "better law enforcement and better cooperation on the part of the police courts." Many Washington cities are also passing stringent local ordinances on the subject.

Washington is one of 37 states which make suspension or revocation of driving licenses mandatory on the first conviction of drunkenness while driving. Among others are Arizona, Connecticut, Massachusetts, New Jersey, New York and Mississippi.

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of "The Master Plan"

Invalid Zoning—Liability for Damages

MISSOURI.—*Kramer v. City of Jefferson*, 124 S. W. 2d, 525 (Kansas City Court of Appeals, January 30, 1939).—This is a damage suit against the city of Jefferson, and Schwartz, its Building Inspector. Plaintiff Kramer was the owner of a lot in a zoning district in which by the zoning ordinance then existing business buildings were forbidden. He applied for a permit for such a building on his lot and Schwartz, the Building Inspector, refused to issue it on the ground that to do so would be contrary to the ordinance. Kramer had begun his building and wished to continue construction because he believed that the ordinance was invalid, but was unable to do so since the bank refused to loan him the money because he had no permit. After much delay, the ordinance was held by the courts to be invalid. Held by this Court that neither the Building Inspector nor the city was liable in damages for the loss to Kramer on account of this delay. The ordinance was an abortive attempt to exercise a police power granted the city by the state. The ordinance was therefore governmental in character. Its enforcement would not be of special profit to the city. In such cases a municipality is not liable for losses resulting from its action in good faith.

Zoning Ordinance—Permit, Delay Issuing Pending Change

NEW YORK.—*O'Neil v. Riverdale Park, Inc.*, Supreme Court, Bronx County, reported in *New York Law Journal*, March 20, 1939.—This is an application by the plaintiffs, owners of single-family residences in the Riverdale section of New York City to restrain the defendants, owners of real property in the same locality, from constructing an apartment house pending proceedings now before the City Planning Commission to change this area to a G district where only single-family houses are allowed. The area in question is a neighborhood that is largely composed of commodious and handsome residences for single-family occupancy, surrounded by trees and shrubbery and beautified by gardens. The Court grants the plaintiffs' motion in order to "save the City Planning Commission from the embarrassment of the acquisition of vested rights, which undoubtedly might result if the defendants should break ground and commence the construction of their proposed multiple dwelling in a virginal area."

EDITOR'S NOTE.—This case would seem to be contrary to the law both in this state and generally throughout the country. See Bassett, Zoning, p. 110, Note 2. To the same effect are also *Dubow v. Ross*, Supreme Court, Nassau County, *New York Law Journal*, July 15, 1938; *Fieldston Property Owners Association, Inc. v. Hall*, Supreme Court, Bronx County, *New York Law Journal*, June 28, 1938; Contra *Fieldston Property Owners Association, Inc. v. Hall*, Supreme Court, Bronx County, *New York Law Journal*, August 1, 1938, p. 275. The applicant for the permit has a clear right to his permit under the zoning regulation as it exists, and to delay its issuance or deny it when it is entirely uncertain what the change in the regulation will be, or indeed whether there will be any change at all, would seem to be contrary to established principles of right and justice.

Zoning Ordinance — Prohibition of a Given Use Within a Given Distance of Zone Boundary Line

NEW YORK.—*Heimerle v. Village of Bronxville*, 5 N. Y. S., 2d. 1002 (Supreme Court, Westchester County, July, 1938).—The case was concerned with a funeral home. The lot in question was a border line lot in a business district. The building was an old residential frame structure. Amongst the safety provisions of the building code was one which prohibited the use of a frame structure for business purposes. The zoning ordinance required a certificate of occupancy for a change of use. Such certificate could not be issued if the proposed use would violate the building code. Without obtaining a certificate of occupancy, the owner proceeded to use the ground floor for a funeral home, which use, though conforming to the zone plan, was illegal. Thereafter an amendment to the zoning ordinance was enacted which prohibited, amongst other specified uses, a funeral home within 200 feet of any residential zone. The action was an action to have this amendment declared void as applied to a funeral home on plaintiff's property and to enjoin any interference with such use. The Court decided in favor of the town and against the property owner.

The opinion contains an elaborate discussion of the right to regulate locations of funeral homes and similar uses; but, of the legal issues discussed, the one of greatest interest was the contention that a prohibition of specific uses in a business district within a specified distance from the zone boundary line constituted a violation of the provision in the statute which required zoning regulations to be uniform for each class or kind of building throughout each district.

The Court held that the amendment under attack amounted to the creation of a separate district within the business district and, as the regulations were uniform throughout such special district, this uniformity provision of the zoning statute was not violated. It held the 200 feet limitation to be not unreasonable.

From the News Letter of the American Society of Planning Officials.

EDITOR'S NOTE.—See in this connection "Transition Zoning," by Arthur C. Comey, being Harvard City Planning Studies, No. V, Cambridge, Harvard University Press, 1933.

Garage — Permit Issued Subject to Condition

VIRGINIA.—*City of Alexandria v. Texas Co.*, 1 S. E. 2d, 296 (Supreme Court of Appeals, February 20, 1939.—The defendant, Texas Co., applied to the City Council of the city of Alexandria for a change of the zoning district in which its property was situated, from residential, in which filling stations were not permitted, to commercial, in which they are allowed; and at the same time for a permit for such a station on its lot. The plans and specifications of the Texas Co. showed that the station was to be illuminated by floodlights.

Neighbors objected to the change in zoning and the granting of the permit for the station unless the company would agree not to install the floodlights. The company agreed to this condition, and the change in district was made and the permit issued. There was no legal reason why the zoning should not be changed and a permit for a filling station in such a district issued. Other stations in the district had floodlighting, and there is no evidence that the use of such lights is a detriment to the public health, morals or safety, or the general welfare. Subsequently the company applied for a license to use floodlights, which was refused. Held by the Court that such refusal was improper. A restriction against floodlighting cannot in this case be supported as a proper exercise of the police power. The imposition of the restriction in this case is discriminatory. And the Texas Co. is not bound by its agreement not to use floodlights. The state cannot grant a privilege subject to an agreement that the grantee of the privilege shall surrender a constitutional right, even although the state has the unqualified power to withhold the grant altogether.

Aviation Laws

The staff of the New England Regional Planning Commission has prepared a "Synopsis of Legislation Relating to Airway and Airport Development in New England" which will be useful to those interested in aeronautics in any state. The pamphlet is Publication No. 55 of the National Resources Committee, Region One, whose office is 2100 Federal Building, Boston, Mass.

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Left: Surface consolidation in Story County.

Below: Route 37 in Harrison County where surface consolidation held perfectly for as long as 6 weeks without dragging.

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Court Decisions Affecting Municipalities

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for injury to pedestrian struck by automobile in street where he was forced by muddy sidewalk (Missouri Supreme Court: *Stollhans v. City of St. Louis*, 121 S. W. 2d, 808).

City held not liable for injury to pedestrian due to defect in sidewalk consisting of transverse crack that caused a difference in levels of the sidewalk ranging from three inches to less across the walk (Louisiana Court of Appeal: *Loucks v. City of Crowley*, 185 So. 648).

City held not liable to pedestrian struck by automobile in street where he had to walk because sidewalk was obstructed (Indiana Appellate Court: *Struble v. City of Gary*, 18 N. E. 2d, 465).

City held liable for injury to pedestrian caused by street-cleaning hose getting out of control of city employees (Montana Supreme Court: *Stevens v. City of Butte*, 85 Pac. 2d, 339).

City held not liable for injury to pedestrian who stepped into hole in sidewalk, filled with water, where she previously knew the location and character of the defect (Pennsylvania Supreme Court: *Jordan v. City of Pittsburgh*, 3 Atl. 2d, 677).

City held liable for electrocution of youth by city's electric wire that was broken by falling dead tree limb (Kansas Supreme Court: *Webb v. City of Oswego*, 86 Pac. 2d, 553).

Claim held to aver legal liability of city for injury caused bather in municipal swimming pool by barbed wire fence (Virginia Supreme Court of Appeals: *Hoggard v. City of Richmond*, 200 S. E. 610).

City held not liable to street-car conductor injured by explosion of kerosene burning asphalt heater used in making street repairs (Ohio Court of Appeals: Hamilton County: *Kohake v. City of Cincinnati*, 18 N. E. 2d, 501).

City held not liable for death of bicylist who raced down an inclined street in daylight and was thrown by uneven surface where refilling of excavation was settling (Connecticut Supreme Court of Errors: *Livingstone v. City of New Haven*, 3 Atl. 2d, 836).

Bond Issues

Holders of special assessment bonds held entitled to sue to compel city and its officers to account for diversion of funds raised to pay bonds (Alabama Supreme Court: *City of Carbon Hill v. Merchants' Bank & Trust Co.*, 185 So. 387).

City held empowered to issue revenue certificates for utilities administration building payable from gas-plant revenues, certificates not being "bonds" requiring electoral approval under constitutional provision (Florida Supreme Court: *State v. City of St. Petersburg*, 185 So. 451). See, also, decisions of same court in case involving certificates issued for light-plant improvements (*Anderson v. City of Wauchula*, 185 So. 352) and case involving water-works improvements (*Panama City v. State*, 185 So. 452).

Civil Service

Reduction of working hours of employee paid on hourly basis held such "suspension" as required compliance with civil service requirements for notice, hearing, etc. (Massachusetts Supreme Judicial Court: *Goss v. Justice of District Court of Holyoke*, 18 N. E. 2d, 546).

Township held empowered to abolish police chiefship and demote incumbent to patrolmanship as necessary economy measure (New Jersey Supreme Court: *Branin v. Delaware Township*, 3 Atl. 2d, 806).

Contracts

City officials who participated—although in good faith—in sale to city of property by corporation in which they held stock held required to reimburse city for illegal payment (Wisconsin Supreme Court: *Reetz v. Ketch*, 283 N. W. 348).

Dump-truck held "apparatus," not within statutory requirement for competitive bidding in sale to city, and not "material" or "supplies," within requirement for competitive bidding (New Jersey Supreme Court: *Peter's Garage v. City of Burlington*, 3 Atl. 2d, 634).

Debt Limits

Constitutional debt limit held applicable to various items of municipal indebtedness but not to mandatory and necessary obligations (Washington Supreme Court: *Goff v. City of Seattle*, 86 Pac. 2d, 222).

Drainage

Municipality held not entitled to divert natural flow of surface water to injury of private property owner (New Jersey Court of Appeals: *Rooney v. Millstone Twp.*, 3 Atl. 2d, 580).

Easements

Landowner held entitled to revoke permission for maintenance by city of water mains, sewer, etc., and to compel city either to remove same or discontinue use or pay compensation for the permission (Maryland Court of Appeals: *Mayor and City Council of Baltimore v. Brack*, 3 Atl. 2d, 471).

Fund Investment

Statute permitting investment of improvement assessment funds in bonds at par held to bar purchases below or above par, but to give official discretion to determine what bonds are worth par (Indiana Supreme Court: *Read v. Beczkiewicz*, 18 N. E. 2d, 789).

Hospitals

City held empowered to receive bequest for benefit of city hospital gratuitously treating needy patients (Georgia Supreme Court: *Mora v. Youngblood*, 200 S. E. 689).

Housing Projects

Montana housing laws and city's contract with housing authority upheld as means of eliminating slums (Montana Supreme Court: *Rutherford v. City of Great Falls*, 86 Pac. 2d, 656).

Judgments

City held not empowered to compromise at less than face value final judgments in its favor (Kansas Supreme Court: *State v. City of Pratt*, 85 Pac. 2d, 10).

Licenses

Dairy company buying and processing raw milk held exempt from license tax under statute as being a "manufacturer" (Ohio Court of Appeals, Hamilton County: *Village of North College Hill v. Woebkenberg*, 18 N. E. 2d, 614).

Vehicular delivery service afforded customers by a business establishment situated outside municipality held not to support imposition of license tax, unless statute authorized same (New Jersey Supreme Court: *Benesh v. Wolf*, 4 Atl. 2d, 523).

Ordinance licensing money lenders held not invalid as being discriminatory because exempting banks, trust companies and building and loan associations (Oklahoma Supreme Court: *Shinn v. Oklahoma City*, 87 Pac. 2d, 136).

Ordinances

Title of ordinance held not required to particularize provisions ordained (Washington Supreme Court: *Elliott v. City of Leavenworth*, 85 Pac. 2d, 1053).

Ordinance held void because provisions were not set forth in Council minutes (Mississippi Supreme Court: *Garraway v. State*, 185 So. 803).

Ordinance provisions held properly proved by testimony of City Clerk, charter provision for proof by certified copy not affording exclusive method of proof (Tennessee Court of Appeals: *Wilson v. Moudy*, 123 S. W. 2d, 828).

Pensions

Ordinance reducing police pension rate held applicable to officer injured before but not disabled until after ordinance was adopted. Excessive payment which pensioner refused to refund held properly deducted from payments subsequently accruing (California District Court of Appeal: *Brooks v. Pension Board of City of Alameda*, 85 Pac. 2d, 956). See, also, decision of same court holding that pension rate is subject to alteration until right to pension has accrued (*Carr v. Fire Commissioners of City and County of San Francisco*, 85 Pac. 2d, 959).

Police Measures

Miami ordinance forbidding any act made a misdemeanor by statute upheld as being sufficiently definite (Florida Supreme Court: *Orr v. Quigg*, 185 So. 726).

Public Utilities

Interpreted as making property owner liable for water service to his predecessor, water board rule held void (Maryland Court of Appeals: *Home Owners Loan Corp. v. Mayor and City Council of Baltimore*, 3 Atl. 2d, 747).

Company held not entitled to refuse to furnish service at rates fixed by its contract on ground that same were confiscatory. Franchise ordinance requiring company to furnish gas to Texas city at same rates charged in twin Arkansas city on rates in latter city being lower upheld (United States Supreme Court: *City of Texarkana v. Arkansas-Louisiana Gas Co.*, 59 Sup. Ct., 448, reversing decision of United States Circuit Court of Appeals, Fifth Circuit, 97 Fed. 2d, 5).

Electric company held not an "inhabitant" of a city in which it operated an electric plant, so as to be entitled to sue to enjoin city from acquiring and operating an electric transmission line, and city held not a "public utility" in such sense as to require a certificate of convenience and necessity from the State Public Service Commission (Alabama Supreme Court: *Birmingham Electric Co. v. City of Bessemer*, 186 So. 569).

Railroads

State Railroad Commission held unempowered to permit railroad company to abandon viaduct and substitute grade crossing (Iowa Supreme Court: *Incorporated Town of Huxley v. Conway*, 284 N. W. 136).

Referendum Proceedings

In determining whether a referendum petition contained signatures of the required percentage of the qualified electors of a village, held electors should be counted whether or not their names appeared on the last preceding assessment roll (New York Supreme Court, Appellate Division: *In re Neuendorfer*, 9 N. Y. Supp. 950).

Under California statutes, ordinance held repealable only by new ordinance adopted by council or initiated by people and not by submission of "proposition" to people whether or not ordinance should be repealed (California District Court of Appeal: *Schilduachter v. City of Compton*, 87 Pac. 2d, 64).

Salaries

City held not liable for so much of teachers' salaries, fixed by ordinance, as exceeded budget provisions under charter (Minnesota Supreme Court: *Doyle v. City of St. Paul*, 284 N. W. 291).

Sewage Disposal

Nearby property owners held not agrieved by borough's installation of sewer outlet into ocean, pursuant to State Board of Health order, especially since proceedings were pending to condemn such rights as owners had (New Jersey Supreme Court: *Faulks v. Borough of Allenhurst*, 4 Atl. 2d, 518).

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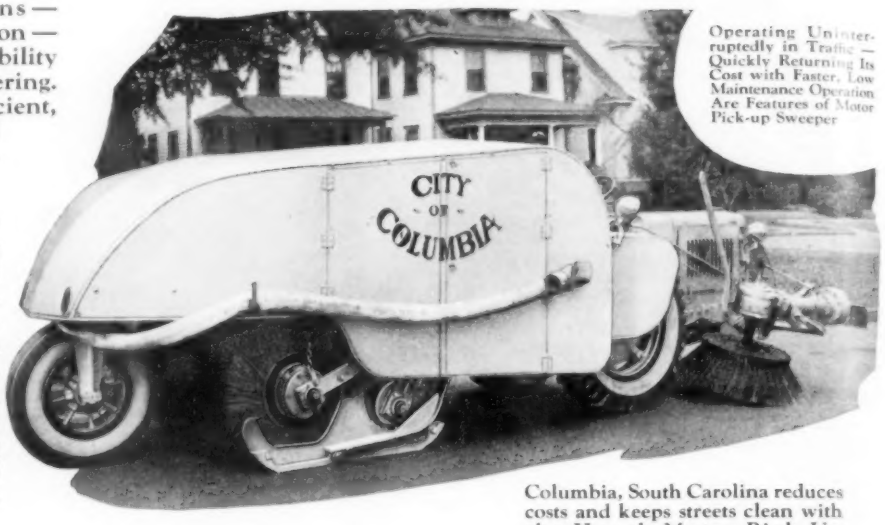

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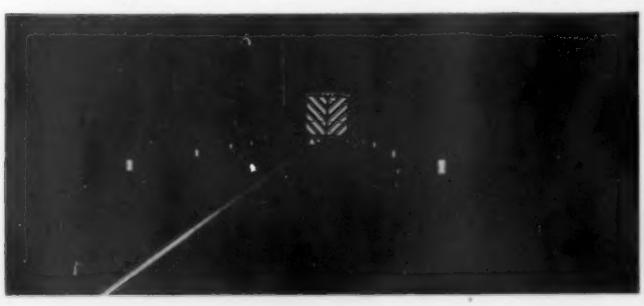

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Taxation

Tax Exemption.—Symposium conducted by the Tax Policy League, December 28-30, 1938, in Detroit, Mich. 1939. *vii* + 237 *pp.* $3.00.

"The problem of tax exemption no doubt had its origin very shortly after taxes were first invented; and it has ramified and multiplied, as taxes have become more numerous and diverse, to perplex legislators, administrators, and taxpayers in devious ways," states Frederick L. Bird, of Dun and Bradstreet, in the Foreword to the important and comprehensive volume on "Tax Exemption," published by the Tax Policy League, of New York City.

Consisting of fifteen papers by authorities in the field, the book takes up the general theory of tax exemption, subsidy exemptions, intergovernmental exemptions, subsistence exemptions, and exemptions to stimulate improvements. The tenor of the volume is in general one of strong opposition to the further extension of tax exemptions, and a number of contributors advocate the reduction or abolition of various exemptions now being granted. This is particularly true in connection with some of the subsidy and stimulus types of realty tax exemptions and the income tax exemptions on governmental salaries and securities. Lower levels of income and inheritance tax exemptions are also advocated.

Police

The Police Yearbook, 1938-39.—*Containing the Proceedings of the 45th Annual Conference of the International Association of Chiefs of Police, Held at Toronto, Canada, Aug. 29-Sept. 1,* 1938. —*International Association of Chiefs of Police,* 1313 *E. 60th St., Chicago, Ill.* 1939. *vii* + 296 *pp.* $2.50.

"While the job of law enforcement grows daily more complex, police officials the country over are confronting new problems, devising new solutions, and adopting new attitudes. To record this changing scene is a function of the Police Yearbook," which records the year's progress in perfecting police administration and techniques, not only in coping with crime, but also with the problems presented by the homeless boys of the streets and by increasing traffic accidents. Sections of the Yearbook, each containing several articles, are: Police Organization and Administration; Police Practice, Techniques for Handling Public Disorders, Criminal Investigation and Identification; Police Cooperation; Traffic Control and Accident Prevention; Crime Prevention and Juvenile Delinquency. Included also are reports of the work of special committees, a summary of business transacted, and a list of members of the Association.

Health

The Technical Committee on Medical Care of the President's Interdepartmental Committee to Coordinate Health and Welfare Activities published last February a report, "Need for a National Health Program," which submits recommendations for Federal participation in a national health program. In July, a National Health Conference was called to present this report, for discussion and recommendations, to members of the medical and related professions, public health and public welfare officials, workers in health and social agencies, representatives of labor and farm groups, and other groups composing the general public. "Proceedings of the National Health Conference" contains the report and the verbatim discussion on it which took place at the conference. The report points out the great deficiencies in present health services, and presents five main recommendations for: Expansion of Public Health and Maternal and Child Health Services; Expansion of Hospital Facilities; Medical Care for the Medically Needy; A General Program of Medical Care; Insurance Against Loss of Wages During Sickness. ix+163 pp. 35c.

A smaller pamphlet than the Proceedings, "The Nation's Health," summarizes the report and discussion at the Conference. 116 pp. 20c. (Apply to Supt. of Documents, Washington. D. C.)

Government and Administration

The Municipal Year Book, 1939.—*Edited by Clarence E. Ridley and Orin F. Nolting. The International City Managers' Association,* 1313 *E. 60th St., Chicago, Ill. vii* + 587 *pp.* $5.00.

The sixth annual edition of this veritable encyclopedia of current municipal activities, trends and statistical data contains several new and useful sections and features. Instead of having five main parts as before, there are now six—the innovation being Part V—Municipal Activities. Starting with a section on the proper use of year book statistics, it gives statistical data, with textual summaries, on personnel, salaries, expenditures and other information on police, fire, utility, welfare, public health, library and recreation activities.

The other five Parts cover as before: Part I—Municipal Administration; Part II—Governmental Units; Part III—Municipal Personnel; Part IV—Municipal Finance; and Part VI—Sources of Information. Municipal Administration consists again of a résumé of the more significant events and developments in 25 fields of municipal administration in 1938, written by authorities in these fields. Part II covers the year for state municipal leagues, Federal-city relations, intercity contests; and contains the extensive section in tabular form of governmental data on the 1,809 cities over 5,000. Part III considers the following aspects of municipal personnel: organizations of local government employees (including a directory of these organizations), educational preparation (with directory of colleges and universities), professionalization of the municipal service, the city-manager profession and directory, and the directory of officials in cities over 10,000. Besides the section on municipal debt trends, Part IV introduces an analysis of intergovernmental tax exemptions, and municipal financial data are given for cities over 30,000 instead of for cities over 100,000. New sections included in Part VI on Sources of Information are a list of sources of statistics on city activities, and a selected list of standard references on municipal administration besides the list of selected books and pamphlets of 1938 for municipal officials.

Sewer Rentals

The American Public Works Association, in cooperation with the Municipal Finance Officers Association and the American Municipal Association, has issued a pamphlet, "Sewer Rentals," which presents the actual administrative practices and experiences of more than one hundred cities which charge rents to the users of the sewer system, based upon the extent of that use. The first half of the pamphlet summarizes the data collected, the second half presents them in table form for individual cities. The following aspects of the subject are covered: sewer rentals in relation to municipal finance; responsibility for administration; type of sewerage system; rate structures of different types; special rate problems; approval of sewer service rates by the public and the state; billing practices; collection practices; disposition of revenues. 113 pp. $1.50. (Apply to American Public Works Assn., 1313 E. 60th St., Chicago, Ill.)

Water Pollution

The "Report on Sources of Pollution, Merrimack River Valley, Massachusetts," gives the results of a study made by the WPA, under the sponsorship of the Massachusetts Department of Public Health, on the location of sources of pollution entering the river, and the volumes and types of industrial wastes being discharged therein. With the aid of numerous maps, drawings and tables, the report describes the sewerage system, water supply and other data of cities and towns in the watershed, and concludes with a summary picture. Summary of results of chemical analysis are given in tables and charts in an appendix. The report is submitted with the hope that it will stimulate elimination of sources of pollution, and treatment of wastes. 269 pp. (Apply to W.P.A. Pollution Studies, 175 Congress St., Boston, Mass.)

Judging the City

Your City.—By Edward L. Thorndike. Harcourt, Brace and Co., New York.* 1939. 204 *pp.* $2.00 *from* THE AMERICAN CITY.

A new method of judging the city is evolved in this analysis of what constitutes a livable or "good" city, how 310 American cities rank in this quality, what factors are responsible for it, the correlation of other special factors with it, and how a city can be improved in relation to it. There are 37 principal items, each of which is given a rating or weight, by which cities are judged for their goodness. They include five items of health, eight items of education, two items of recreation, eight economic and "social" items and nine other items. The influence of wealth, income and personal qualities on a city's goodness—as arrived at by this method of scoring —are analyzed; as well as many other smaller factors, such as size, women in the professions, sales, church membership, crime, government, etc. Other chapters correlate with goodness, birth rate and size of family; cost of living; special types of cities (suburbs, cities in different parts of the country, etc.); and the rating which various groups—educators, clergymen, business men, social workers, "reformers"—give to their communities. "Written for all intelligent citizens," the book is easily and quickly read.

* See article, "What Makes a City Good?" on p. 77, of this issue.

Municipal Law

The American Municipal Association (the National Federation of State Leagues of Municipalities) has published "Legal Services of Leagues of Municipalities," describing the assistance relative to legal matters given by the respective state leagues to city councils and administrative officers, and to city and village attorneys in performing legal services for their municipalities. Tables show data about individual states; the text summarizes these data. Services are described under three general headings: general facilities, procedures and relationships, including relationships with bar associations and with the attorney-general's office; legal services rendered by leagues, including cases of leagues serving as counsel or acting as amicus curiae; methods of gathering and circulating legal information. Forms used by the Association in getting data from state leagues are included in appendices. 24 pp. $1.00. (Apply to American Municipal Association, 1313 E. 60th St., Chicago, Ill.)

Housing

The United States Housing Authority has issued five envelope-size leaflets sketching succinctly essential aspects of the public housing program. "The Businessman and Public Housing" shows how housing pays—for the contractor, the manufacturer, the landowner, the real estate man, the investor, the employer, the taxpayer, the merchant. 6 pp.

"Housing and Your Community," written from the average taxpayer's point of view, points out why the slums are expensive to the community, what is being done about it by the USHA, and what the citizen's part is in that program. 6 pp.

"How the USHA Works" describes the functioning of the Authority, emphasizing particularly the local community's responsibility for "initiating, planning, constructing, owning and managing" housing projects. 6 pp.

"Rehousing Relief Families" explains the policy of the USHA in housing relief families, indicating what rents will be in housing projects in comparison to rents of private housing. 8 pp.

"Tax Exemption" points out why tax exemption is necessary to keep rents low enough for slum families and to keep public housing from competing with private housing, and shows that there will be little reduction in the city's annual income thereby, particularly when saving due to slum elimination is considered. 8 pp. (Apply to United States Housing Authority, Dept. of the Interior, Washington, D. C.)

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Five American Cities

Five Cities—The Story of Their Youth and Old Age.—By George R. Leighton. Harper & Brothers, New York. 1939. *x* + 370, *including index.* $3.50 *from* THE AMERICAN CITY.

The personality, the color, the feel of five typical American cities come alive in this swift, sharply etched sketch of their personal, social, economic and political life, from the times of their first settlers to the present day. The five brief histories include that of: Shenandoah, Pa., "The Rise and Fall of an Anthracite Town"; Louisville, Ky., "An American Museum Piece"; Birmingham, Ala., "The City of Perpetual Promise"; Omaha, Nebr., "The Glory Has Departed"; Seattle, Wash., "The Edge of the Last Frontier." It is not only the descriptions of the individual cities which are of interest in this book, but the dramatic, tumultuous development of American life—which, by example, it reflects: "the first moves westward, the Civil War, ... the tide of immigration, the opening of the frontier, the rise of the trusts, the decline of agriculture, the consolidation of the money power in New York and the 'triumph of business enterprise,' the crash of '29 and the descent into the depression."

Water

Two articles by Edward W. Moore, of the Harvard Graduate School of Engineering, have been reprinted. "Graphic Determination of Carbon Dioxide and the Three Forms of Alkalinity," reprinted from the *Journal* of the American Water Works Association, presents graphs from which may be calculated the parts per million of carbon dioxide, normal carbonate and hydroxide content, of natural and treated waters. The graphs are plotted from equations by which the amounts of these substances can be calculated from the hydrogen ion concentration and total alkalinity of a water. The limitations of the equations and diagrams are discussed. 16 pp. 10c.

"Calculation of Chemical Dosages Required for the Prevention of Corrosion," reprinted from the *Journal* of the New England Water Works Association, presents the method of determining the quantities of chemicals necessary to saturate a given water with calcium carbonate, by a series of simple calculations based on the Langelier equation. This method is suggested as a substitute for the usual method of running marble tests on several dosed samples of water, because of the reduction in the amount of laboratory work required. 7 pp. 10c. (Apply to Graduate School of Engineering, Harvard University, Cambridge, Mass.)

Taxation

Among the several publications explaining taxation to the layman, one of the most effective is "Taxes," the February issue of *Building America*, a non-profit, photographic magazine on modern problems, for use in schools and by the general public, published by the Society for Curriculum Study. Illustrated profusely with action photographs of human appeal, and with apt cartoons and diagrams, it answers the questions: "What kinds of taxes do we Americans pay and what do we get in return for our money? What is the history of taxes in our country? What are the principal systems of taxes in America, and what kinds of taxes do these systems levy? Are taxes levied on a fair basis? Are they too high? What can America do to improve its method of taxation?" Different points of view on controversial matters are presented. A bibliography is included. 31 pp. 30c. (Apply to *Building America*, 425 W. 123rd St., New York.)

Police

Another pamphlet on vocational training stimulated by the George-Deen Act, which provides Federal funds for such training activities, has been published—"Training for the Police Service." It discusses: the scope of the police officer's work and the problem of police training; organization and operation of police training programs; the training of instructors for the police service; a suggested basic police training program. The type of work and knowledge required to carry out this work is outlined in table form, briefly but in detail, for ten different jobs in the police service. VIII + 84 pp., including bibliography. 15c. (Apply to Supt. of Documents, Washington, D. C.)

Health

Community Health Organization.—Edited by Ira V. Hiscock, Professor of Public Health, Yale University School of Medicine. The Commonwealth Fund, Oxford University Press, New York. Third Edition, 1939. *xvi* + 318 *pp., including index.* $2.50 *from* THE AMERICAN CITY.

This book presents again, in its third edition, the best current practice in the organization and administration of the community health program, revised to take account of the changes in public health conditions and the increase in public and official interest since the second edition. A new chapter is introduced on "The Health Survey." An interesting chapter on "New Health Problems" discusses the following increasingly important activities closely related to the work of a health department—nutrition, mental hygiene, industrial hygiene, cancer control, heart disease, housing. As in the 1932 edition, the following aspects of the public health program are considered: the relation of public health to the various levels of government; the planning, organization and administration of the program; public health education; vital statistics; control of disease; maternal, child health and school health programs; public health nursing; milk and food control, and sanitation; laboratory service; hospitals and outpatient facilities; voluntary health service; financial aspects of community health work. Variations in program with size and type of community are suggested for each aspect of the work. For each aspect, personnel and budget are recommended.

Traffic

In 1938, 32,000 persons were killed, more than a million injured. At this rate, one out of 20 persons in this country will be killed or injured in automobile accidents within the next five years. The pamphlet, "Lest We Regret," tells briefly and vividly the facts about this appalling annual slaughter. Several sketches point out how close at home this problem is to everyone. Simple tables show for 1938: the proportion of various types of accidents—collisions of vehicles with pedestrians formed the greatest number; actions of drivers resulting in death and injury—exceeding the speed limit caused the greatest number; the number of persons killed by age groups; the weather conditions prevailing in accidents; the hours of occurrence of accidents; and other factors which have significant connection with accidents. Throughout, the way to prevent these highway disasters is stressed. 36 pp. Distributed free in quantity as well as individually. (Apply to The Travelers Insurance Co., Hartford, Conn.)

The first of a series of volumes of "A Traffic Survey" is a summary of the scope and methods of this exhaustive study made by the Chicago Park District in cooperation with the WPA. It summarizes the work performed, and the kinds and types of data that were gathered in respect to each of the following aspects of the study: brief history of parks; vehicular volumes; vehicular speeds; origin and destination study; pedestrian traffic; channelization, segregation, limited ways; special events and recreation; parking; engineering, enforcement and education. The results of the survey, as outlined briefly, have been: facilitation of traffic movement; reduction in the accident rate; improvements in present and future boulevards; increased accessibility to Chicagoans of recreational and educational facilities. An Appendix to this volume contains the final forms developed and used in gathering and compiling traffic data. 214 pp., including 84 illustrations and 10 tables. (Apply to Otto K. Jelinek, Traffic Engineer, Chicago Park District, Chicago, Ill.)

Fire Prevention

The National Board of Fire Underwriters has published "Regulations for the Protection of Openings in Walls and Partitions, Against Fire," which gives specifications for doors, shutters, windows, etc., which will enable them to resist the passage of fire of the various intensities that may be expected at the openings in wall or partitions in which these doors, shutters, windows, etc., are installed. For each type of opening, the following characteristics are considered—number of units, stability, insulation, combustibility, safety, installation and maintenance. Labeled diagrams aid in clarifying explanations. 104 pp. Pocket size. (Apply to National Board of Fire Underwriters, 85 John St., New York.)

Traffic

Seven Roads of Safety—A Program to Reduce Automobile Accidents.—By Paul G. Hoffman, President, Automotive Safety Foundation and The Studebaker Corporation, in collaboration with Neil M. Clark. Harper & Brothers, New York. 1939. *xii* + 87. $1.00 *from* THE AMERICAN CITY.

This informal, concise and meaty little volume lends a human and personal interest to the statistics on highway accidents, to the technicalities of traffic control and highway construction, and to the complexities of highway and traffic legislation. The problem of traffic accidents is stated quite simply and clearly; and the progress that has been made in meeting it, by various safety organizations and civic groups throughout the country, is recounted. The principal purpose of the book is the presentation of the Automotive Safety Foundation's Program, with objectives for each of the following "roads to safety": 1. Legislation; 2. Motor Vehicle Administration; 3. Enforcement; 4. Engineering; 5. Education; 6. Technical Personnel Training; 7. Research. What different organizations are doing to carry out these objectives, and the progress which was made in 1938 in attaining them, is outlined.

City Life

New York Panorama—A History and Account of Every Phase of Present-Day Life in the World's Greatest Metropolis. American Guide Series. Prepared by the Federal Writers' Project of the Works Progress Administration in New York City. Random House, New York. 1938. *xii* + 526 *pp.* $2.50 *from* THE AMERICAN CITY.

Since heterogeneity and contrast are probably the most distinctive characteristics of New York besides its size and speed, it seems particularly appropriate and most truly reflective of the metropolis that hundreds of research workers and writers have taken part in the preparation of a book about the life of the city. Also reflecting New York's diversity is the extremely wide range of subjects covered. There are chapters on the natural setting and history of the city, government, housing, city planning, recreation, maritime affairs, transport, trade and industry, labor, social welfare, education, nationalities, Negroes, speech, literature, art, architecture, classical music, popular music, the theater, motion pictures, radio, the press. Sordidness and beauty, extreme poverty and extreme wealth, figures and poetry, staggering problems and humor, monotony and vitality, ruthlessness and vision—all make up this picture of a throbbing city alive twenty-four hours a day.

Finance and Taxation

When an upper limit on all state and local property tax levies was voted in the state of Washington, the cities' main source of further revenue was eliminated. The Association of Washington Cities has issued several lively mimeographed bulletins which point out simply and forcibly the financial dilemma of the Washington cities and the resulting curtailment of municipal services; the disproportionate share of the state's funds which has gone to counties and schools compared to that which has gone to municipalities; and the necessity for legislation which will effect a more just apportioning of these funds. "Facts about Highways and City Streets—Mileages, Traffic, Revenues, Expenditures" (12 pp.) shows the comparative mileage of highways and city streets, the comparative traffic on them, the proportion of the gas tax which city dwellers pay, and the proportion of this revenue which the city receives. Other bulletins are: "The Financial Condition of Washington Cities" (8 pp.), "State Aid to Local Units of Government," (3 pp.), "Taking It on the Chin" (1 p.), "Washington Cities Ask for Protection of Home Rule" (2 pp.) (Apply to the Association at the Univ. of Washington, Seattle, Wash.)

Public Works

The "Index to A.S.T.M. Standards and Tentative Standards," as of January, 1939, lists the 870 specifications, methods of testing, recommended practices, definitions of terms, charts and tables, which have been published by the American Society for Testing Materials. Besides being alphabetically indexed, items are listed in numerical sequence according to their serial designations. Tentative standards are published a year or two before they are finally adopted. 140 pp. (Apply to the Society, 260 S. Broad St., Philadelphia, Pa.)

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Libraries

A plan by which positions in the library profession are classified on the basis of their duties and responsibilities is presented in "Classification and Pay Plans for Municipal Public Libraries." It defines the classes of municipal public libraries and their branches, departments and divisions; outlines the standards of education, experience and pay for personnel grades (clerical service, subprofessional service and professional service); and describes in detail the personnel specifications for library positions of the three grades. Sample score cards for librarians of the different classes are included. Directions are given for the use of the volume, and for each of its main sections. XV + 189 pp., including index. $2.25. (Apply to The American Library Assn., 520 N. Michigan Ave., Chicago, Ill.)

Other Reports Received

EAST CLEVELAND, OHIO.—Annual Report, The East Cleveland City Commission, 1938. 4 pp.

COUNTY OF ERIE, N. Y.—"Financial Statement, Statistical Data and Essential Facts." County Treasurer, Buffalo, N. Y., March, 1939. 39 pp.

HONOLULU, HAWAII.—Biennial Report, Board of Water Supply, 1938. January, 1939. 226 pp.

JACKSON, MISS.—"Municipal Services." Annual Report, City Auditor, 1939. 76 pp.

LANSING, MICH.—Biennal Report, 1937-38, The Stream Control Commission. 82 pp.

LARCHMONT, N. Y.—Annual Report, Board of Trustees, year ending February 28, 1939. 24 pp.

MIAMI, FLA.—Report on Finances, June 30, 1938. 36 pp.

NEW HAVEN, CONN.—"Spotlight." Accomplishments of Chamber of Commerce for year ended February 28, 1939. 20 pp.

NEW JERSEY.—Annual Report, N. J., State Planning Board, 1938. 31 pp. 50c.

NEW YORK, N. Y.—"Camps and Camping." Bulletin of the Russell Sage Foundation Library, 130 E. 22nd St. 1939.

PAINESVILLE, OHIO.—Financial Report, 1938. 18 pp.

SCRANTON, PA.—"Evidence of Progress," Scranton Chamber of Commerce. April, 1939. 27 pp. 15c.

SPOKANE, WASH.—Annual Report, City Auditor, 1938. 115 pp.

SOUTH BEND, IND.—"Fact-O-Grams—For That Civic 'I.Q.'" Association of Commerce. 1939. 6 pp.

Conventions -- When and Where

Meeting is annual convention unless otherwise designated

MAY 8-13.—CHICAGO, ILL.
National Fire Protection Association. M'ng Dir., Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

MAY 11-13.—TACOMA, WASH.
American Water Works Association — Pacific Northwest Section. (Winthrop Hotel.) Sec., Fred Merryfield, Oregon State College, Corvallis, Oregon.

MAY 15-17.—BOSTON, MASS.
National Conference on Planning. (Hotel Statler.) Joint annual conference of American Society of Planning Officials, American Planning and Civic Association, National Economic and Social Planning Association and American Institute of Planners. Conference Dir., Miss Elisabeth H. Herlihy, Room 24, State House, Boston, Mass.

MAY 15.—WEST SPRINGFIELD, MASS.
New England Sewage Works Association. Spring meeting. (Springfield Country Club.) Sec.-Treas., L. W. Van Kleeck, State Office Bldg., Hartford, Conn.

MAY 18-19.—SPOKANE, WASH.
Association of Washington Cities. (Davenport Hotel.) Exec. Sec., Chester Biesen, Univ. of Washington, Seattle, Wash.

MAY 22-23.—COLUMBIA, MO.
Missouri Association of Municipal Utilities. (Tiger Hotel.) Sec.-Treas., W. J. McCarroll, Fulton, Mo.

JUNE 5-7.—NIAGARA FALLS, N. Y.
Conference of Mayors and Other Municipal Officials of the State of New York. (Hotel Niagara.) Exec. Sec., William P. Capes, City Hall, Albany, New York.

JUNE 5-6.—ERIE, PA.
Pennsylvania Association of Planning Commissioners. (Hotel Lawrence.) Sec.-Treas., Arthur Cassell, City Planning Commission, Allentown, Pa.

JUNE 8-10.—ATLANTIC CITY, N. J.
Eastern Association of Fire Chiefs. (Madison Hotel.) Sec., Charles E. Clark, Box 217 Wayne, Pennsylvania.

JUNE 11-15.—ATLANTIC CITY, N. J.
American Water Works Association. (Hotels Ambassador and Chelsea.) Sec., Harry E. Jordan, 22 E. 40th St., New York.

JUNE 12-14.—TORONTO, ONT.
Canadian Public Health Association. (Royal York Hotel.) Gen. Sec., Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 13-16.—MILWAUKEE, WIS.
Smoke Prevention Association. Sec., Frank A. Chambers, 1411 City Hall Square Bldg., Chicago, Illinois.

JUNE 15-17.—BUFFALO, N. Y.
American Public Welfare Association. (Statler Hotel.) Dir., Fred K. Hoehler, 1313 E. 60th St., Chicago, Ill.

JUNE 16-18.—NIAGARA FALLS, N. Y.
Community Chests and Councils, Inc. (Niagara Falls Hotel.) Exec. Vice-Pres., Allen T. Burns, 155 E. 44th St., New York.

JUNE 19, WEEK OF.—ESTES PARK, COLO.
Citizens' Conference on Government Management, sponsored by Alfred P. Sloan Foundation and the University of Denver. Dir., A. D. H. Kaplan, Dept. of Government Management, Univ. of Denver, Denver, Colo.

JUNE 20-22.—PROVIDENCE, R. I.
New England Association of Fire Chiefs. Sec., John W. O'Hearn, Watertown, Mass.

JUNE 26-28.—STATE COLLEGE, PA.
Pennsylvania Sewage Works Association. (Nittany Lion.) Sec., L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 28-30.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

JULY 2-6.—SAN FRANCISCO, CALIF.
National Education Association of the United States. Exec. Sec., Willard E. Givens, 1201 16th St., N. W., Washington, D. C.

JULY 5-13.—STOCKHOLM, SWEDEN.
International Federation for Housing and Town Planning. Sec., Mrs. Paula Schafer, rue Cantersteen 47, Shell Bldg. 608, Brussels, Belgium.

JULY 17-22.—OGDEN, UTAH.
National County Officers' Association. Pres., George F. Breitbach, Court-House, Milwaukee, Wisconsin.

AUGUST 13-19.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. (Northwestern Univ.) Sec., C. R. Miles, 832 First Nat'l Bank Bldg., Chicago, Ill.

AUGUST 14-17.—CEDAR RAPIDS, IOWA.
League of Iowa Municipalities. Sec.-Treas., Frank G. Pierce, Marshalltown, Iowa.

AUGUST 24-25.—DULUTH, MINN.
American Water Works Association—Minnesota Section. (Duluth Hotel.) Sec.-Treas., Ronald M. Finch, Wallace & Tiernan Co., Inc., 414 Flour Exchange, Minneapolis, Minn.

SEPTEMBER 12-14.—KANKAKEE, ILL.
Illinois Municipal League. Sec. A. D. McLarty, 500 E. Capitol Ave., Springfield, Ill.

SEPTEMBER 12-15.—MONTREAL, QUE.
New England Water Works Association. (Hotel Windsor.) Sec., Frank J. Gifford, 613 Statler Bldg., Boston, Mass.

SEPTEMBER 18-21.—PHILADELPHIA, PA.
American Institute of Park Executives. (Bellevue-Stratford Hotel.) Exec. Sec., Will O. Doolittle, Box 422, Tulsa, Okla.

SEPTEMBER 18-21.—OAKLAND, CALIF.
League of California Municipalities. Sec., R. Graves, 223 City Hall, San Francisco, Calif.

SEPTEMBER 18-19.—OLD POINT COMFORT, VA.
League of Virginia Municipalities. Exec. Sec., Morton L. Wallerstein, 902 Travelers Bldg., Richmond, Va.

SEPTEMBER 20-22.—LANSING, MICH.
American Water Works Association—Michigan Section. (Olds Hotel.) Sec., M. N. Gerardy, Water Board Bldg., Detroit, Mich.

SEPTEMBER 20-23.—SAN FRANCISCO, CALIF.
International Association of Fire Chiefs. (Fairmont Hotel.) Sec., James J. Mulcahey, 16 Franklin Ave., Yonkers, N. Y.

OCTOBER 5-6.—READING, PA.
American Water Works Association — Four States Section. (Berkshire Hotel.) Sec.-Treas., Carl A. Hechmer, Washington Suburban Sanitary Dist., Hyattsville, Md.

OCTOBER 9-10.—SANTA FE, N. MEX.
National Parks Conference. American Planning and Civic Association. Exec. Sec., Harlean James, 901 Union Trust Building, Washington, D. C.

OCTOBER 9-11.—PITTSBURGH, PA.
American Public Works Association. Exec. Dir., Frank W. Herring, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—SAN FRANCISCO, CALIF.
International Association of Chiefs of Police. (Fairmont Hotel.) Exec. Vice-Pres., William P. Rutledge, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—PROVIDENCE, R. I.
International Municipal Signal Association, Inc. (Providence-Biltmore Hotel.) Sec., Irvin Shulsinger, 7 E. 42d St., New York.

OCTOBER 9-13.—BOSTON, MASS.
National Recreation Association. (Hotel Statler.) Sec., T. E. Rivers, 315 Fourth Ave., New York.

OCTOBER 11-13.—KANSAS CITY, MO.
American Water Works Association—Missouri Valley Section. (Hotel President.) Sec., Earl L. Waterman, University of Iowa, Iowa City, Iowa.

OCTOBER 16-19.—DALLAS, TEXAS.
American Water Works Association—Southwest Section. Sec.-Treas., Lewis A. Quigley, 3320 W. Berry St., Fort Worth, Texas.

OCTOBER 16-20.—CINCINNATI, OHIO.
National Association of Public School Business Officials. Sec., H. W. Cramblet, Board of Education, Pittsburgh, Pa.

OCTOBER 16-20.—ATLANTIC CITY, N. J.
National Safety Council. M'ng Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

OCTOBER 17-20.—PITTSBURGH, PA.
American Public Health Association. (William Penn Hotel.) Exec. Sec., Dr. Reginald M. Atwater, 50 W. 50th St., New York.

OCTOBER 20-21.—ATLANTIC CITY, N. J.
American Water Works Association—New Jersey Section. (Claridge Hotel.) Sec.-Treas., H. N. Lendall, College of Engineering, Rutgers Univ., New Brunswick, N. J.

OCTOBER 25-28.—SAN FRANCISCO, CALIF.
American Water Works Association—California Section. Sec-Treas., Carl M. Hoskinson, Div. of Water, Sacramento, Calif.

OCTOBER 30-NOVEMBER 1.—OSHKOSH, WIS.
American Water Works Association—Wisconsin Section. Sec., L. A. Smith, City Hall, Madison, Wis.

Why be Maintenance-Poor?

Guinda Avenue near Lincoln Avenue, Palo Alto, California. Concrete paved in 1928.

look at PALO ALTO'S low maintenance costs for CONCRETE

TYPE A	$16.85
TYPE B	6.30
CONCRETE . .	1.78

THESE figures represent *average surface maintenance costs* per 1000 sq. yd. per year. They are taken from Palo Alto's annual report on street maintenance and cover the past 24 years. Average age of concrete, 13 years. No wonder this progressive city now has about 3½ times as much concrete as all other pavements combined.

To concrete's admitted long life and low maintenance, add these other demonstrated advantages: concrete is safe—skid-resistant in wet weather or dry; smooth riding—free from ruts and chuckholes; clean and good looking.

What's more, concrete usually costs *less to build* than other pavements of equal load-carrying capacity—and it *stays built* for long periods without costly resurfacing and reconstruction.

PORTLAND CEMENT ASSOCIATION
Dept. A5-4, 33 W. Grand Ave.
Chicago, Ill.

A National Organization to Improve and Extend the Uses of Concrete

The More Concrete Streets the Less Maintenance Expense

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A SOUTH BEND COMBINATION STREET FLUSHER, STREET SPRINKLER AND FIRE FIGHTER MOUNTED ON AN INTERNATIONAL TRUCK FOR DELIVERY TO GIRARDO, COLOMBIA, S. A.

The 800-gallon flusher is equipped with three flushing nozzles for washing pavements, two sprinkler heads for dust-laying on dirt roads. The fire-fighting equipment will throw a stream 75 feet vertically. It carries suction hose, two 24-foot extension ladders, searchlight, axe and crowbar

New Small Pump for Deep Wells

THE NEW PEERLESS HI-LIFT PUMP

A new pump which is claimed to be able to obtain the maximum capacity from small drilled deep wells from 3-inch diameter up, with lifts ranging from 40 feet to 1,000 feet and with small variation in capacity or pressure regardless of the height of lift, has been announced by the Peerless Pump Division, Food Machinery Corporation, Department 123, 301 West Avenue 26, Los Angeles, Calif. The simplified design, slow speed of operation at 1,760 rpm and unusual resistance to abrasion, make this Hi-Lift pump particularly suitable for small municipal installations, dairies, small farms, country estates, industrial establishments and homes.

This pump is neither a turbine nor a plunger pump, but combines the advantages of both in a compact unit which is easily installed. The capacities start at 5 gallons per minute and pressures in excess of 500 pounds are obtainable. The small hard chrome heat-treated stainless steel helical-contoured rotor moves at slow speed inside a cutless rubber stator, creating a positive pumping action. This little element will lift 50 gallons per minute 200 feet. Two elements will lift the same quantity per minute 500 feet.

Complete information regarding this pump will be found in Bulletin 142 which may be secured from Peerless Pump Division.

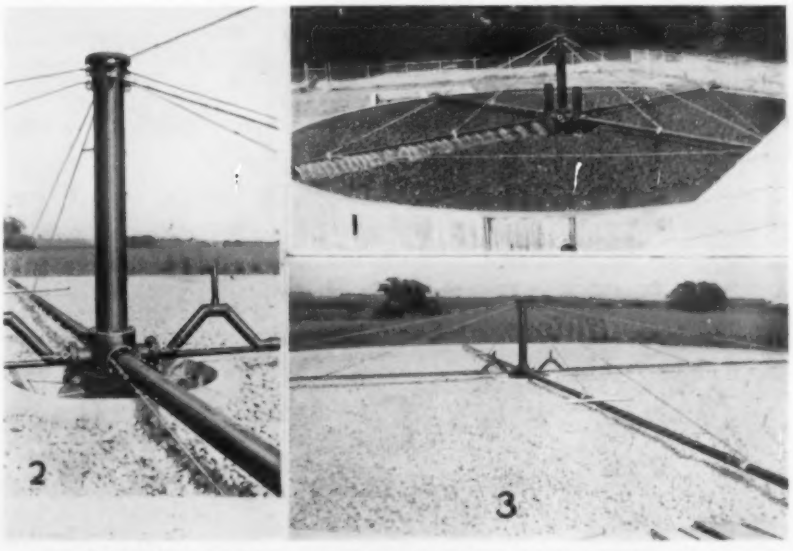
Prepare Sewage Sludge for Marketing

A new bulletin has been issued by The Royer Foundry & Machine Co., Kingston, Pa., telling how sewage-treatment plants may market sewage sludge by reducing the moisture content, shredding, aerating and loading the sludge with a Royer Sludge Disintegrator. This machine can be used for improving sludge; that is, for increasing its fertilizing properties by mixing enriching material with the sludge, producing a more readily salable and more profitable product. Copies of "A Self-Liquidating Investment" may be secured by writing direct to Royer.

Rotary Distributors for Sewage Treatment

A method to increase the maximum range of flow for rotary sewage distributors under a minimum differential of head, has been announced by Pacific Flush Tank Co., 4241 East Ravenswood Avenue, Chicago, Ill. This is secured by operating the four-arm distributor as a two-arm unit on low flows with automatic controls and then bringing the other two arms into service when the rate of flow increases to a predetermined volume, thereby requiring a lower head to discharge a given quantity of sewage for maximum flow conditions at the disposal plant.

The unit is entirely automatic, making use of overflow weirs to control the flow, and it operates without other control or the use of a dosing tank. The original type of automatic control consisted of weirs and special overflow boxes, as shown in illustration 1 of a P.F.T. rotary distributor at Metuchen, N. J. An improved arrangement to eliminate weir losses and further reduce head requirements is shown in illustrations 2 and 3 of a distributor installed at Belle Plaine, Iowa. The distributor at Metuchen was designed for a maximum flow in excess of 1000 per cent of the minimum and is reported to have operated satisfactorily under these extreme flow conditions without a dosing tank or other controls of flow for a period of more than two years.



INSTALLATIONS OF P.F.T. DOUBLE-FLOW ROTARY SEWAGE DISTRIBUTORS

HELP YOURSELF TO TOP ECONOMY —PUT A FORD V·8 ON YOUR JOB!

If you start reaching for the red ink when it comes time each month to tally up your hauling or delivery costs, it's time to change to Fords. The 1939 line of Ford V-8 Trucks and Commercial Cars hits high hauling costs right between the eyes. These modern units are built to give you the over-all economy that's so important in keeping costs down.

Any way you figure it, Ford performance adds up to money-saving performance. The original price tag is low. Insurance and license fees are low. Operating and up-keep costs are low. And so is depreciation.

On top of these savings, Ford gives you the tough, rugged construction that defies hard service — keeps your truck on the job.

Why not see how a Ford Truck fits into your hauling picture? Get in touch with any Ford dealer, and ask about an "on-the-job" test that will give you the facts before you buy.

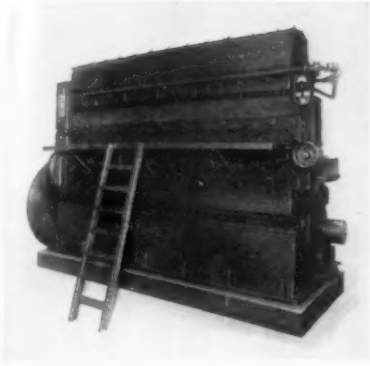
CHECK YOUR TRUCK AGAINST THESE QUALITY FORD FEATURES!

- ***V-8 Engines*** — 95, 85, 60 hp. Smooth, dependable, low-cost power. Quality materials and precision workmanship for efficient operation and long life.
- ***Semi-centrifugal Clutches*** — Non-tiring pedal action. Centrifugal force provides tremendous power-transmitting capacity. Up-keep costs kept at a minimum.
- ***Sturdy, Trouble-free Transmissions*** — Large roller and ball bearings for all forward speeds reduce friction, save power. Oil-hardened chromium-steel gears for long service.
- ***Full Torque-tube Drive***—Springs relieved of driving and braking stresses provide better cushioning of truck and its load. Shackle-bolt wear reduced, spring life prolonged.
- ***Rugged Rear Axles*** — Driving pinion is straddle-mounted to maintain gear tooth alignment. All truck axles are full-floating, with weight carried on axle housing — none on axle shafts. These features increase dependability and long service, reduce up-keep expense.
- ***Big, Powerful Hydraulic Brakes*** — Equalized braking action for straight stops. Big brake drum diameters and large lining areas for long brake life, low maintenance.

In every detail, the quality of all Ford cabs and bodies matches the high quality of Ford chassis. Their exceptional durability means long service with low up-keep cost.

FORD V·8 TRUCKS AND COMMERCIAL CARS

Ford Motor Company • Builders of Ford V-8 and Mercury Cars, Ford Trucks, Commercial Cars, Station Wagons and Transit Buses



THE NEW TYPE CC DIESEL BY WORTHINGTON

Worthington Diesels for Municipalities

Worthington Pump & Machinery Corporation, Harrison, N. J., has recently issued some new literature describing its Type CC totally-enclosed, direct-injection diesel engine. The new engine is of the four-cycle, trunk-piston type, and is said to be one of the simplest and most compact designs consistent with high efficiency and accessibility. The cone-type cylinder head featured in this engine is a Worthington development which has eliminated the possibility of head breakage due to load and temperature stresses. Full provision for expansion is made in this construction, and the need for a gasket between the cylinder head and the liner is abolished.

The lubrication system has been developed so that all moving parts are pressure-lubricated and the main bearings receive their supply of oil from a cast-in, jointless oil pipe in the base. Positive sight-feed lubrication of the cylinder wall is also provided. Liberal oil storage is built into a deep sump in the base beneath the screens.

This engine, which is described in Bulletin S-500-B36, has been developed for installation where continuous heavy-duty loads are to be carried. It is applicable to municipal and industrial plants and for use as a peak-load unit for larger plants having other types of prime movers.

Brick Association Official Dies

Quincy A. Campbell, Assistant Chief Engineer of the National Paving Brick Association, Washington, D. C., died in Cleveland, Ohio, on Wednesday, April 19. He was born in 1891, graduated from the Ohio State University in 1920 with the degree of Bachelor of Civil Engineering, and during the World War served as instructor in the aviation ground school at the University and at Kelly Field, Texas. After receiving his discharge from the army in 1919, he became Assistant Engineer for the city of Hamilton, Ohio.

After spending a year in engineering work in the Republic of Santo Domingo, he joined the Ohio Department of Highways in 1921 as Assistant Engineer. During the following seven years he served the Department as Assistant Division Engineer at Ravenna and as Assistant Chief Engineer for Maintenance, with headquarters at Columbus. In July, 1928, he resigned from the Ohio department to accept the position with the National Paving Brick Association which he held at the time of his death.

Maintaining Earth Streets in Cities

A new hydraulic controlled unit for light work in maintaining earth streets in cities has been announced by The Huber Manufacturing Co., Marion, Ohio. This 4-wheeled tractor powered by a 4-cylinder gasoline engine carries a 9-foot blade between the front and rear axles. The blade has a clearance of 9 inches above ground, can cut to 9½ inches below ground level, and can be rotated 85 degrees.

The over-all length of the pneumatic-tired tractor is 127½ inches, and its width is 52 to 73 inches. The wheelbase is 84½ inches. The tractor operates from 2 to 10 mph forward and 1.8 mph in reverse. The blade is completely controlled hydraulically, making possible simplified construction, greater blade pressure, and convenience in operation. Stripped of its maintenance equipment, the tractor may be readily converted into a power mower with a 5- to 7-foot sickle bar.

You can't get rid of

SLIMY SAM SEWER SLUDGE

with a shovel—

You gotta have an OK Champion Sewer Cleaner to clean out your sewer mains.

The hand models will get him positively, but the power machines will do it faster. You don't want to send men down to spend all day in the sewer when it isn't necessary. You can't endanger the health of your citizens by dirty sewers when the remedy is so easy. Your expensive sewage disposal plant can't do its best work when sewers are dirty and costly damage to the plant happens regularly with dirty sewers.

Many years of rains washing down street dirt, cinders, bricks, etc., eventually fill up any sewer. Finally comes the day of flooded basements, damage suits and hurry-up, unsatisfactory, emergency, temporary cleaning.

New York City, Atlantic City, Flint, Little Rock, Bay City, Duluth, Westfield, Jersey City, Akron, Midland, Gary and hundreds of other cities keep their sewers at full efficiency by routine machine cleaning with OK Champion equipment. The cost is very low.

Why not get your copy of OK Champion literature, now ready for you?

CHAMPION CORPORATION

4716 Sheffield Ave., Hammond, Ind.

Specify

PORCELAIN ENAMEL *for* **STREET SIGNS**

● Porcelain enameled street signs are the ultimate in both durability and economy. That is because porcelain enamel is mineral through and through. And a mineral which has been smelted at temperatures that make it glass-hard. More than that, this glass-hard porcelain enamel is fired at 1550°F. until it is fused, or welded, right onto its supporting metal. There is no finish for signs known to man that is so hard, so endlessly bright, so fadeless, so efficient as porcelain enamel.

Send today for this beautifully illustrated book. It tells what porcelain enamel is—how it is made—why it is the lifetime, trouble-free finish for street and park signs. Sign and return the coupon, now.

This is an "Institute" book. It sells no one brand of porcelain enamel. Your request will bring only the book—no salesmen.

Porcelain Enamel Institute, Inc.
612 North Michigan Ave., Chicago

Send me, free of cost or obligation, a copy of your 24-page book "Porcelain Enameled Signs."

Name.....

Position.....

Address.....

City *State*

RADIO SPEEDS UP HUTCHINSON FORCE

Police at scene in average of 2 minutes with aid of Western Electric Police Radio

Caught . . . in the nick of time. Saving minutes when they mean most is the chief purpose of Western Electric Police Radio. Whether 1-way or 2-way systems are used, they are a boon to better service.

With 13 motorcycles and 9 patrol cars, the Police Department of Hutchinson, Kansas, patrols 16½ square miles—does it *fast*—with the aid of Western Electric 1-way police radio.

Since radio joined the force in March, 1934, the Hutchinson Police have recovered 25% more stolen property than formerly. And they now get to the scene in an average of 2 minutes—3½ times as fast as before.

Chief Louis D. White says, "We have had many cases where our Police Radio has played an important role. We find it most effective in the apprehension of hi-jackers."

Western Electric manufactures the right equipment to meet your needs no matter what the size of the community. For full details write Graybar Electric Company, Graybar Building, New York City.

Western Electric Police Radio is giving added protection to 45,000,000 people.

Western Electric

Distributed by GRAYBAR *Electric Co. In Canada: Northern Electric Co., Ltd.*

POLICE RADIO TELEPHONE EQUIPMENT

New Self-Powered Portable Driller

After many tests on actual drilling operations conducted on all types of jobs and under a wide variety of working conditions, the Barco Manufacturing Co., 1801-15 Winnemac Avenue, Chicago, Ill., has announced full-time production of its newly designed self-powered portable driller known as the Barco J-2. In contrast to previous Barco models, which consisted of a drilling swivel applied as an accessory tool to the Barco hammer, the J-2 is designed as a driller, incorporating the drill-turning mechanism directly in the base of the power unit.

This gasoline-powered drill is light in weight, so that the operator can easily carry it to the site of the drilling operation. A ratchet wrench for turning the drill rod is standard equipment and, if the user desires to eliminate hand spooning or flushing of the hole, a small portable air compressor unit, necessary storage tank and fittings are available.

Literature describing the new Barco J-2 is now available by writing the manufacturer and mentioning this magazine.

Construction Data for Asphalt Users

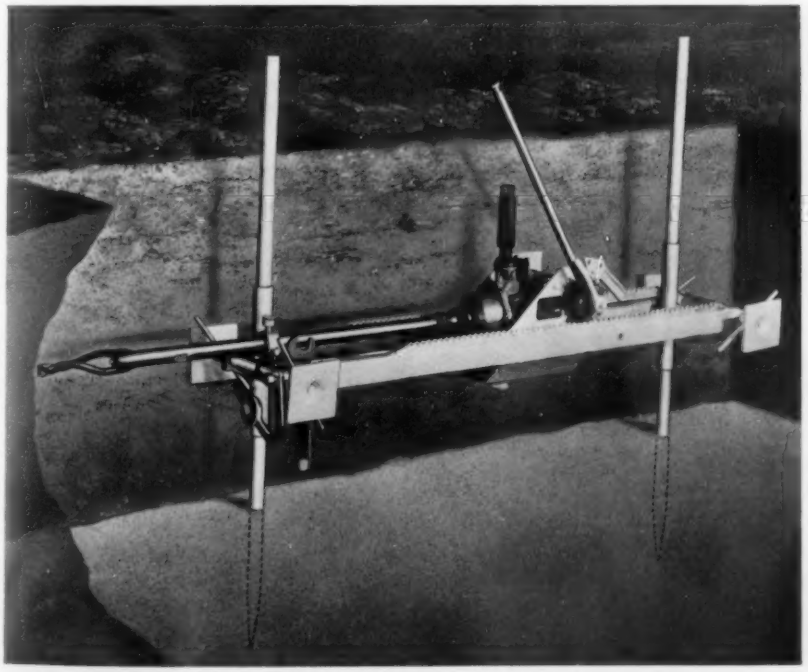
Barber Asphalt Corporation, Barber, N. J., has issued a new loose-leaf 75-page booklet which contains a wealth of construction data for asphalt users, including tables and specifications, directions for heating and discharging of tank cars, design for agitating equipment in cylindrical tanks and rectangular tanks, capacities of tank distributors, and other data on the application of asphalt in highway work. In addition there are complete specifications for various Trinidad Native Lake Asphalt products. Copies of this booklet may be secured direct from the Barber Asphalt Corporation by mentioning this item or through this magazine.

New Tool Installs Underground Pipe

A new light-weight boring tool has been developed for crews installing small service pipe and is built on the same principle as its larger forerunners. The Hydrauger Corporation, Ltd., 116 New Montgomery Street, San Francisco, Calif., has announced this new unit, which is much lighter in weight and more compact and can be easily and readily operated by one or two men. Because of its low air consumption, it requires the use of a very small compressor, thereby avoiding the necessity of moving large crews, heavy equipment and compressors onto small jobs.

Almost no ditching is required when using this method of pipe laying. Its most effective service is found in drilling under streets, highways, railroad tracks, gardens, lawns, inlaid sidewalks, embankments and buildings. In cases where pavement cutting permits are refused, the horizontal bore is the only practical solution.

This new boring instrument will open clean holes 2 inches in diameter up to 40 feet long. Beyond this distance it can be aimed to hit a sighted mark with remarkable accuracy. The boring bars are driven by a high-speed air motor, and by means of a small high-pressure stream of water circulating through the hollow drill stems the cutting edges are kept cool and well lubricated. In addition to this, the borings are washed back and the hole "mudded" to prevent sloughing of the walls.



THE NEW LIGHT-WEIGHT HYDRAUGER

South Bend
31 YEARS EXPERIENCE
STREET FLUSHERS
•
STREET SPRINKLERS
•
GUTTER SNIPE
Pickup Sweepers
•
BITUMINOUS MATERIAL DISTRIBUTORS
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MAINTENANCE UNITS
For Bituminous Surfaces
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TRAFFIC LINE MARKERS
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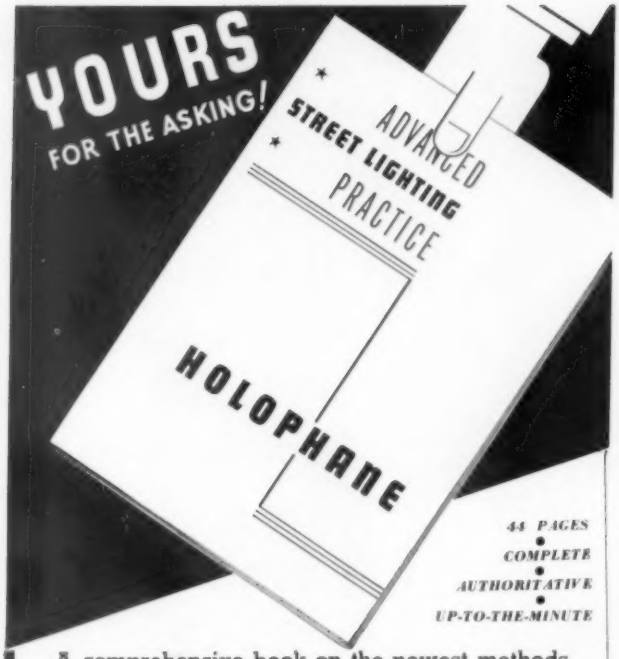
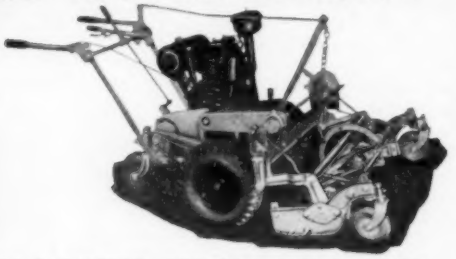
MUNICIPAL SUPPLY COMPANY
SOUTH BEND, IND.



A comprehensive book on the newest methods and materials in use for progressive street lighting. Sent on request without charge. Write

HOLOPHANE CO., Inc.
342 Madison Avenue, New York
Toronto: 385 Yonge Street

THE IDEAL *Caretaker* GIVES A BIGGER RETURN ON YOUR INVESTMENT



12 MONTHS' SERVICE EVERY YEAR

Equipment that works for you in *every* season—reduces overhead, lowers cost and pays bigger dividends on the investment—The Ideal Caretaker, with its efficient, economical attachments provides—a lawn or weed mower, roller and sprayer unit for spring and summer—a leaf sweeper for fall and a snow sweeper for winter. It takes less than thirty minutes to convert the Caretaker from, for example, a mower to a sprayer. The Caretaker has ample power—is easy to handle and is sturdily constructed for years of trouble-free service. Write for the new Ideal Caretaker Catalog—or ask for a demonstration and see for yourself, just how much year-around-work the Caretaker can really do for you. There is no obligation.

IDEAL POWER LAWN MOWER CO.
400 Kalamazoo Street Lansing, Michigan
New York Branch
12 Harrison St.
New Rochelle, N. Y.
Canadian Distributors
Aikenhead Hardware, Ltd.
17 Temperance St., Toronto, Ont.

THIS CATALOG OF
SAFE PLAYGROUND EQUIPMENT
free

Whether you want one unit or complete playground equipment . . . this FREE illustrated catalog shows every safe playground apparatus for individual and group recreation. Each EverWear unit is durable, economical, safe . . . designed for definite play and health functions. Tear out and mail this ad TODAY.

EverWear MANUFACTURING CO.
Dept A. SPRINGFIELD, O.

OUTDOOR DRINKING FOUNTAIN ESSENTIALS:

1. Materials that resist abuse and exposure (freezing, thawing, etc.)
2. A self-closing valve, for economy in use of water
3. An unfailing, rustless valve spring
4. A solid bronze bowl and bubbler font
5. Rustless brass piping
6. Easily repaired without digging up

Always write the name MURDOCK into your fountain specifications, to insure best water service.

Approved by over 900 cities.

The Murdock Mfg. & Supply Co.
CINCINNATI Since 1853 OHIO

ASPHALT MIXING PLANTS H&B

PORTABLE and STATIONARY

ALL SIZES

FOR HOT AND COLD MIXES
REPRESENTING THE NEWEST DEVELOPMENTS *in* ASPHALT PLANT ENGINEERING

HETHERINGTON & BERNER INC.
ENGINEERS AND MANUFACTURERS
701-745 KENTUCKY AVENUE • INDIANAPOLIS, INDIANA

REGINALD F. HAYES

Hayes of Hydro-Tite Chairman of Outing

Reginald F. Hayes, Secretary of the Hydraulic Development Corp., West Medford Station, Boston, Mass., has been selected as Chairman for the outing of the New England Water Works Association to be held on June 28, 1939, at the New Ocean House, Swampscott, Mass.

Nuchar Chicago Office Moved to New Location

The Industrial Chemical Sales Division of the West Virginia Pulp & Paper Co., Chicago, Ill., has announced the removal of its offices from 205 West Wacker Drive to 35 East Wacker Drive, where larger and better office facilities are available. These manufacturers of Nuchar activated carbon invite out-of-town friends to use the new offices as headquarters when in Chicago.

A Pump Handbook

Pomona Pump Co., Pomona, Calif., has issued a new illustrated loose-leaf pump handbook covering centrifugal deep-well turbine pumps, drawings of electric pump heads, standard specifications for deep-well turbine pumps, deep-well turbine pump applications, sump pumps and short settings of turbine pumps, mine pumps, Niagara low-lift pumps, miscellaneous applications of turbine pumps, engineering data, formulae and hydraulic data including curves, charts, tables, rules and standards, as well as pictorial presentations of outstanding pumping plants of general interest.

Since each copy of the Pomona Pump Handbook is registered, it is requested that municipal officials desiring copies write direct to Pomona Pump Co. on their official letterheads, mentioning this item.

Asphalt Institute Appoints Hinkle

Albert H. Hinkle of Louisville, Ky., has been appointed District Engineer at Cincinnati, Ohio, for The Asphalt Institute, which has its headquarters in New York City. Major W. R. Macatee, whom Mr. Hinkle succeeds, has been promoted to the management of the Washington office of the Institute.

The Cincinnati District Office of The Asphalt Institute covers the states of Ohio, Kentucky, Indiana, Michigan and West Virginia. Mr. Hinkle has held the important posts of Deputy State Highway Engineer of Ohio, State Maintenance Engineer of Indiana, State Engineer of the Federal Public Works Administration of Indiana, and at the time of his appointment was Director of the Kentucky Rock Asphalt Institute at Louisville.

New Large Pipe Line for Harrisburg, Pa.

The city of Harrisburg, Pa., has recently awarded a contract to the Columbia Foundation Co., Inc., Philadelphia, Pa., for the construction of a 42-inch inside diameter steel water-supply line having a total length of 2½ miles. The maximum working pressure is to be 250 pounds per square inch. The steel pipe supplied by National Tube Co. is to be joined in the field with Dresser couplings, and construction is to start immediately.

Gannett, Eastman & Fleming, Inc., of Harrisburg, are the consulting engineers; William T. DeHart is Director of the Department of Public Safety at Harrisburg; E. Clark Cowden is City Engineer, and George W. Roberts Water Works Superintendent.

Medal Awarded to Mathieson Chemist

The Western New York Section of the American Chemical Society has awarded the Jacob F. Schoellkopf Medal for 1939 to Charles F. Vaughn, of the Mathieson Alkali Works, 60 East 42nd Street, New York, as an outstanding man in the alkali and chlorine industry, including his work on the graphitization of carbon, and his successful development and operation of the Castner mercury cell.

New Paving Breaker

A new paving breaker, known as the CC-80, has been announced by Ingersoll-Rand Co., 11 Broadway, New York. It is an 80-pound machine with an air-cushioned piston providing easier holding, especially at higher air pressures. The reduction in shock on the wearing parts, and the fact that the piston cannot strike the fronthead, result in less breakage and lower upkeep. Other design features include a larger anvil-block bearing which insures correct alignment, an extra-large built-in lubricator, and reverse buttress self-locking threads on the fronthead bolts.

5 Reasons
FOR PEERLESS LEADERSHIP..

1. Cooled Oil Head Bearings: Increases over-all efficiencies from ½ to 2%.

2. Improved Packing Gland: Prevents water leakage and is self-compensating for wear.

3. Hard Chrome Bearing Sleeve: An exclusive feature of the Peerless Water Lubricated Turbine Pump; adds over 8 times to the life of the drive shaft.

4. Double Bowl Bearings: Every bowl is equipped with a bronze and rubber bearing, both being perfectly water lubricated.

5. Double Sealed Bowls: Fully enclosed impeller sealed conventionally at side with an additional seal of cutless rubber located at bottom of impeller which assures sustained efficiency and long life.

Factories:
LOS ANGELES, CALIF., SAN JOSE, CALIF.
FRESNO, CALIF. • MASSILLON, OHIO

★ WATER OR 1 OIL LUBRICATION
Peerless
TURBINE PUMPS
FOOD MACHINERY CORPORATION
PERFORMANCE WITH ECONOMY

No night accidents for more than two years is the record for the intersection of Ocean View Lane and Vista Delmar. In a period of equal length before G-E sodium lighting was installed, there were three night accidents in which eight persons were injured and one was killed

Pedestrian and car are clearly visible under G-E sodium lighting at the intersection of 34th and University Streets

NIGHT ACCIDENTS DROP 93 PER CENT AT 23 Lighted Intersections in Los Angeles

LOS ANGELES is another city which is convinced that safety lighting saves lives. Night-accident studies were conducted on 23 intersections for a period averaging ten months before and after G-E sodium lighting was installed. The record speaks for itself.

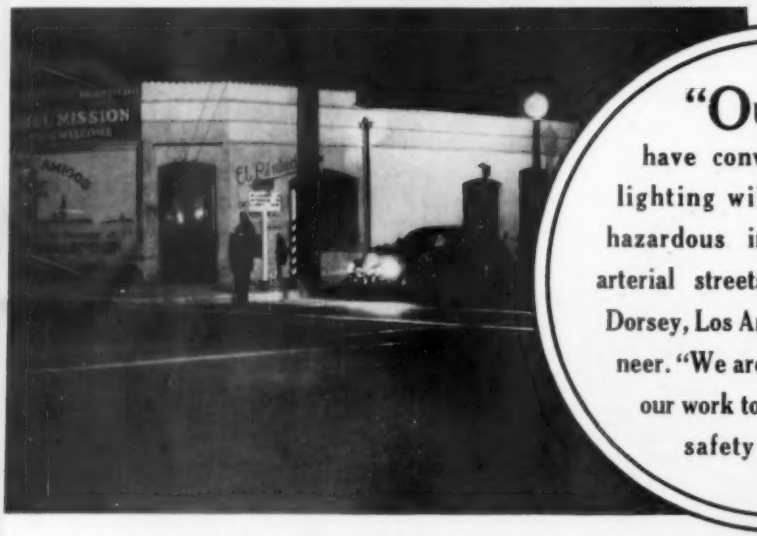
1. Before this lighting was installed, there were 43 night accidents, in which 76 persons were injured and nine were killed.

2. After sodium luminaires were installed, there were but three night accidents, with only three persons injured and not one killed!

3. Night accidents dropped 93 per cent, injuries dropped 96 per cent, and fatalities were ELIMINATED.

Los Angeles now has more than 100 lighted intersections.

Many lives may be saved in your city by adequate street lighting. G-E lighting specialists will be glad to make a survey and help you plan a lighting program. For further information write the nearest G-E sales office or to General Electric Co., Schenectady, New York.



"OUR records have convinced us that lighting will save lives on hazardous intersections and arterial streets," said Ralph T. Dorsey, Los Angeles Traffic Engineer. "We are going ahead with our work to save lives with safety lighting."

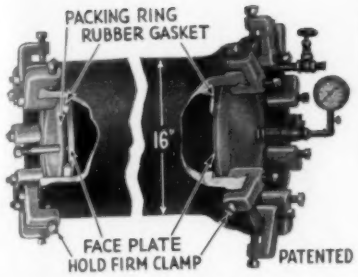
Intersection of Mission Drive, Mission Road, and Santa Anita Street, in San Gabriel, near Los Angeles. This intersection has been made safer for night traffic with G-E sodium lighting

Viaducts and underpasses are hazardous when visibility is poor. Drivers on Ramona Boulevard can easily see the Marengo Street Bridge, lighted by sodium luminaires

NEW YORK WORLD'S FAIR—SEE THE G-E "HOUSE OF MAGIC"—SAN FRANCISCO EXPOSITION

GENERAL ELECTRIC

500-344



HOLD-FIRM TEST PLUGS APPLIED TO BELL-AND-SPIGOT ENDS OF PIPE

Testing of Mains Made Easier

Wherever a pipe line is completed, the specifications require that it be tested under pressure. Unless the line has enough gate-valves to shut off the open ends, a test plug must be used. A simple plug which has worked out satisfactorily in the service of many cities has been developed by Test Plug Manufacturing Co., Niles Center, Ill. It consists of a steel plate, and a rubber gasket, together with the required number of clamps for the size of pipe, all of which may be quickly assembled and installed by one man. The plugs are guaranteed to withstand a hydrostatic pressure of 300 pounds per square inch, while on experimental tests the pressure applied has actually exceeded 400 pounds.

The clamps used in connection with the plugs may be used for a number of different sizes of pipe, so that only a separate steel plate and gasket are required for each pipe size. When installing the plug on the bell end of the pipe, several of the clamps are placed on the bell, then the square rubber gasket and the steel plate are slipped in behind the clamps snug against the pipe, and then the remaining clamps are applied, spacing them about 5 inches apart. First, all the set screws on the bell are tightened, and then the set screws against the steel plate are tightened, so that there is equal bearing all around. The manufacturer warns particularly that care should be taken to brace the pipe at the end to prevent the pressure from the line from pulling pipe joints apart. Each steel plate for the plug is furnished tapped for a ¼-inch pipe connection to release air from the main. The plates are also tapped ¾-inch to 1½ inches for a test pump connection, and for the flushing of trenches.

Free Illustrated Book on Little Rock Supply

Lock Joint Pipe Co., Ampere, N. J., has recently prepared for free distribution a 16-page illustrated booklet, "A New Soft Water Supply for Little Rock, Arkansas," which it will gladly send to readers of THE AMERICAN CITY free on request. The booklet contains a map of the Alum Fork Creek project and numerous illustrations of the rolled earth dam, the concrete spillway, the Lock Joint pipe line and its manufacture in Little Rock, and the filtration plant.

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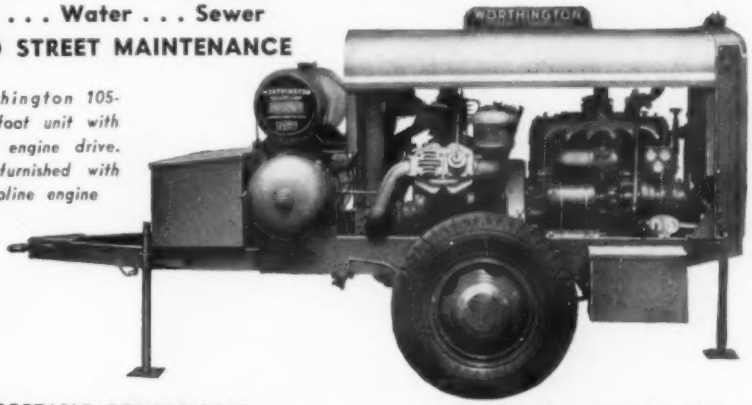

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PC9-11

TRAFFIC ENGINEERS ESTABLISH NIGHTTIME SAFETY *In Concord, Massachusetts*

Concord, Mass., lights a Rotary Traffic Circle with Westinghouse symmetric and asymmetric Reflectolux Jr. luminaires. This system of TRAFFIC SAFETY LIGHTING provides adequate visibility for automobile drivers after sundown.

Westinghouse Reflectolux Jr. luminaire designed for circuits up to 3,500 volts and lamps up to 500 watts or 10,000 lumens. Available with or without ornamentation.

Scientifically engineered thoroughfares and traffic control are ineffectual after dark without adequate illumination. Concord, Mass., realizing this need for visibility, has installed a modern safety lighting system on its Rotary Traffic Circle. Fifteen Westinghouse Reflectolux Jr. luminaires, burning 4000 lumen lamps, illuminate the intersection.

Luminaires are arranged to light the roadways approaching the Circle with a symmetric distribution of light. Asymmetric luminaires are used between the symmetric units. All of the luminaires are located on the outside of the Circle mounted approximately 18 feet and spaced 80 feet apart.

Surface brightness on the pavement, provides drivers in Concord with adequate visibility for safe night driving. Automobiles, pedestrians and other road hazards stand out as silhouettes.

The Westinghouse line of Reflectolux luminaires offer more light, minimized glare, less maintenance, greater flexibility and durability. For complete details, call your local Westinghouse Lighting Specialist; or write Westinghouse Electric & Mfg. Co., Edgewater Park, Cleveland, Ohio.

Westinghouse Lighting Equipment

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Outdoor Lighting

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Lynn Reclaims Wasted Light

By J. FRED MANNING
Mayor, Lynn, Mass.

HOW brightening a black road surface steps up the visibility and economy of the street lighting was determined recently by the city of Lynn in cooperation with General Electric lighting experts and a joint committee of the Asphalt Institute and Illuminating Engineering Society. For the first time, the design of the road surface was coordinated with the design of the illumination.

The first consideration of the special committee was an open-type bituminous-macadam pavement with a black surface of the semi-diffusing type having a minimum reflecting value. The illumination was provided by modern luminaires spaced 110 feet apart and fitted with 400-watt Mazda lamps. In a pavement of this type the surface appears as small spots of brightness alternating with large splotches of darkness. Four large targets 4 feet square having their surfaces painted vertically, half white and half black, were placed in the travel lanes on both sides of the roadway at the relatively short distances of 100 and 200 feet from the observers.

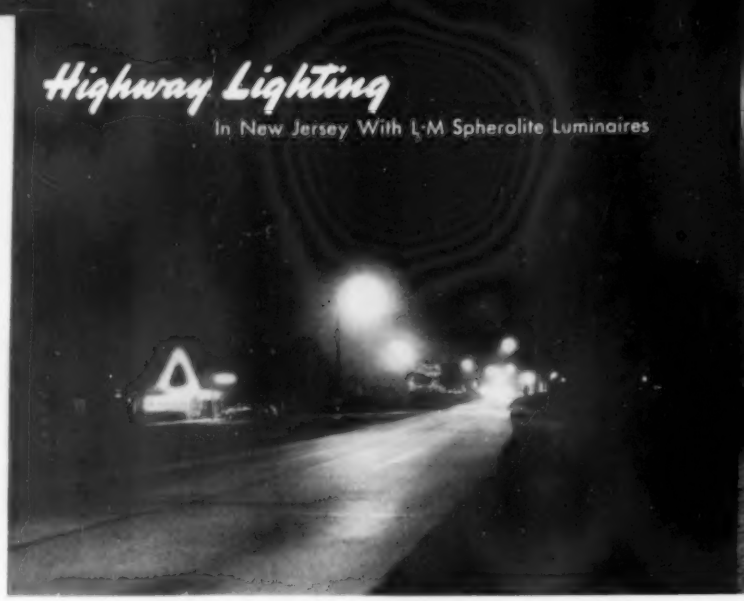
The white portions of all four targets, because of their brightness, were easily seen, since they contrasted sharply with the relatively dark background areas of the pavement. Comparing the visibility of the white portions with the black portions revealed the astounding fact that although the target areas were approximately as large as the average human being, in two cases only was it possible to see the black target areas. In these two cases the black halves of the targets were seen because they were against the relatively bright areas of the pavement. It was obvious by this observation that the visibility of dark objects on such a pavement is largely a matter of chance so far as the motorist is concerned.

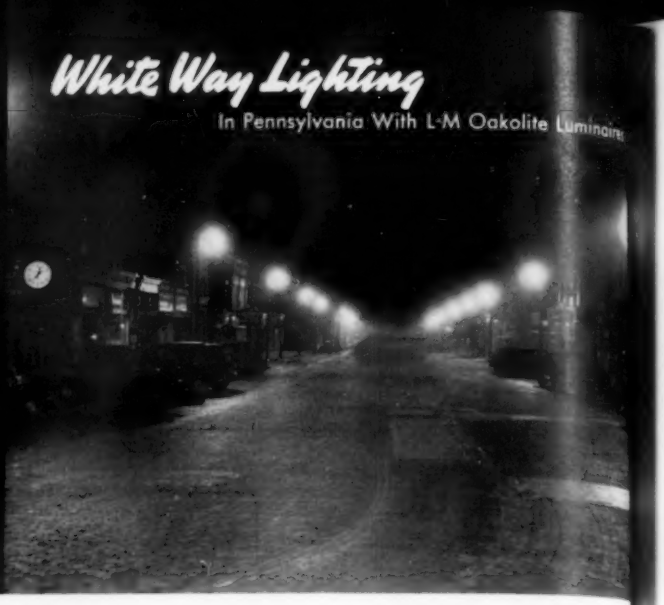
These demonstrations made it clear that vision in secondary streets and highways primarily must be accomplished by means of contrasts between objects and pavement.

DARK-SURFACED EASTERN AVENUE IN LYNN, MASS., IN LOWER VIEW, WAS SURFACED WITH GRANITE CHIPS WITH A 30-PER CENT INCREASE IN REFLECTIVITY, AS SHOWN IN UPPER VIEW

This pavement was then resurfaced with ½- to ¾-inch Chelmsford granite chips "glued" to the old pavement with a thin intermediate layer of asphalt. This produced a diffusing or matte-surface pavement of about 30 per cent reflectivity. Lighting conditions were the same as in the previous test, and the targets were placed in the same positions as before in left- and right-hand lanes of the highway. In this case, the pavement surface appeared bright throughout and the black areas of all four targets were clearly visible. There were no intermittent areas of darkness wherein objects could be partially concealed.

Measurements show that night lighting directed uniformly on this surface





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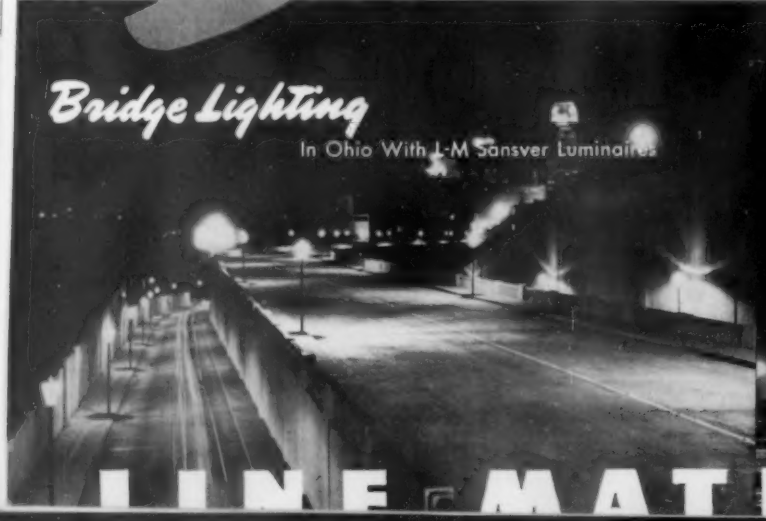

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from overhead reflected uniformly over its whole area. Thus the surface became a background of uniform brightness which silhouetted dark objects against it, regardless of their location in left- or right-hand lane. In bright sunlight it was found to be appreciably less bright when facing the sun than a dark pavement having a high degree of specular reflection.

Still another great advantage was found when the pavement floor was covered with water, as with rain; the surfaces appeared uniformly bright owing to the sides of the chips standing above the water film. With lighting from automobile headlamps alone, the visibility distance was increased several times. Under a cloudy sky the pavement appeared uniformly bright and visibility of objects was high.

Best Economy Is to Standardize on Equipment

By E. W. MOREHOUSE

Public Service Commission of Wisconsin

SINCE bills for street-lighting service are important items in city and city budgets—frequently one of the largest two or three items in village budgets—municipal officials are naturally interested in finding out whether their street-lighting bills are reasonable. If you think the bills are too high for what you get, you naturally protest. Conversely, if it should develop that street-lighting bills are less than reasonable cost, then someone else may protest at being asked to be a godfather and make good the deficiency.

There are two major classifications of street-lighting service — ornamental or white-way, and overhead. Generally speaking, the posts or standards in an ornamental system are owned by the municipality, whereas overhead systems are usually owned by the utility which supplies the energy. The methods of determining street-lighting costs are essentially the same for both types of service; but for an ornamental system owned by a municipality, only the utility's part of the total costs needs analyzing in order to determine rates.

First, let me describe the two major kinds of costs involved—fixed and variable. The fixed costs of taxes, insurance, depreciation, and interest or return relate to the investment in utility plant and equipment used in supplying street-lighting service. These costs might be called the investment costs or the invisible or unseen costs, because they are not readily observed by the average citizen. But they are none the less real costs which have to be met by someone, and they accrue every day in the year. It so happens that in the electric industry these fixed costs are a relatively large proportion of the total costs because of the relatively large amount of plant necessary to deliver service, as compared, for example, with a drugstore.

The variable or operating costs of street-lighting service consist generally of energy, lamp renewals, maintenance, patrolling and inspection.

Plant Investment

The first step in determining fixed costs is to determine the investment in plant and equipment needed for street-lighting service. This investment is of two types—special and joint. By special investment is meant the brackets, mast-arms, control equipment, lighting fixtures of whatever design, plus those wires and poles used exclusively for street lighting. Joint investment includes the poles and wires used both for street lighting and for other classes of service; that is, the poles and wires of the general distribution system.

The determination of these two kinds of investment is not an easy task. We are dependent upon reported accounting records or appraisal and inventory records, or we have to make estimates based on the best information available. Where proper accounting has been followed, the special investment in lamp fixtures, brackets, etc., can be taken from the accounting records reported to the Commission. Special investments in poles and wires are frequently not easily determined, because they have been included in the same accounts with general distribution poles and conductors. In such cases an allocation of these general accounts is necessary to segregate the poles and wires used exclusively for street lighting.

Similar allocations must naturally be made to determine the portion of joint investment in general distribution poles and wires properly attributable to street-lighting use. One large utility found that the proportion of poles, towers and fixtures assignable to street-lighting service ranged from 20 to 25 per cent, based upon the ratio of wire mileage devoted exclusively to street-lighting service to the total mileage of conductors carried on the poles.

Fixed Costs

For privately owned utilities, taxes are generally estimated at the average state tax rate for utility property; for municipally owned plants, local plus school tax rates are used. Annual depreciation expense is estimated on the basis of applying appropriate depreciation rates, in recent years 6 per cent instead of the 7 or 8 per cent frequently used some years ago.

Decreasing the number of lamps, which is frequently suggested, has a direct effect on the fixed costs attributable to special street-lighting investment, but this remedy does not decrease the fixed costs on joint property unless the circuit miles of street-lighting system are decreased. A reduction in the number of street lights also results in shifting some of the joint costs formerly carried by street lighting to other consumers. Unless a reduction in the number of street lights is accompanied by a corresponding reduction in circuit mileage, the total cost per lamp of the remaining lamps becomes greater in order to cover the costs of the joint investment.

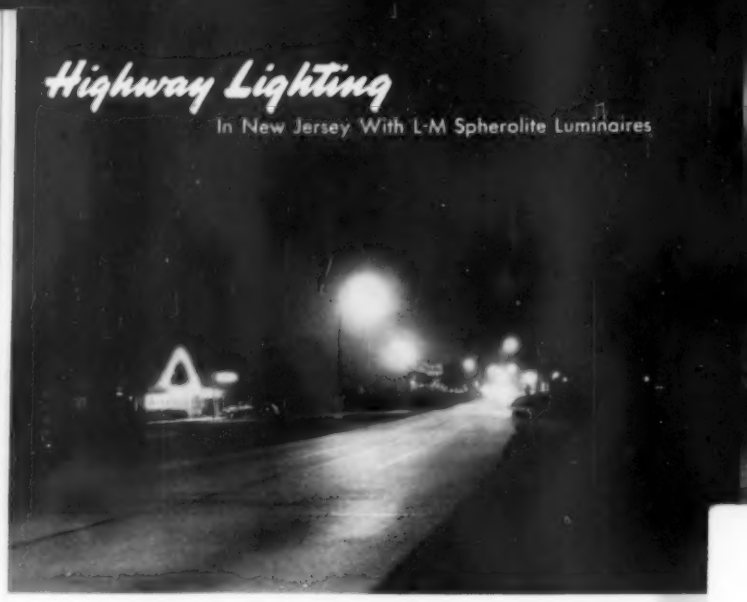
Operating Costs

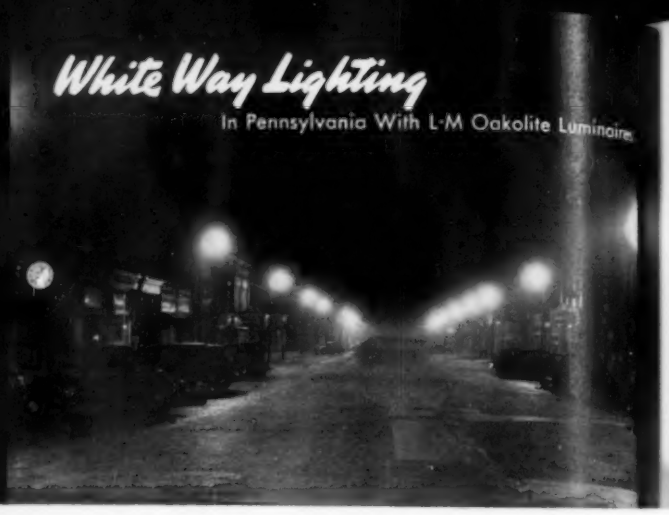
Operating and maintenance expenses involved in operating the general local distribution system poles and wires have to be apportioned between general service and street lighting, according to the proportion of joint investment assignable to street lighting. Of the special operating expenses, patrolling, inspecting and maintenance of street-lighting circuits are related to the length of circuit, rather than to the number and size of lamps; but lamp renewals and energy costs depend on the number and size of lamps used and the burning hours.

Curtailment of burning hours or reduction of lamp sizes affects only the consumption of energy and the number of lamps burning out each year. These are relatively small items in the total cost. Short burning schedules have the effect of making the average system load factor worse and thus tend to higher average unit costs.

Rates

The reasonable costs of street-lighting service once having been determined, the problem is to translate these costs into a rate schedule. Three principal types of street-lighting rate schedules are in use in Wisconsin. The first is a quotation of so many dollars per lamp per year or per month; for example, $24 per 100-watt lamp per year, or $2 per month. The rate for lamps of different sizes and types will vary, since these variations affect the costs. The second type of rate schedule contains a so-called investment charge plus energy prices. In such a





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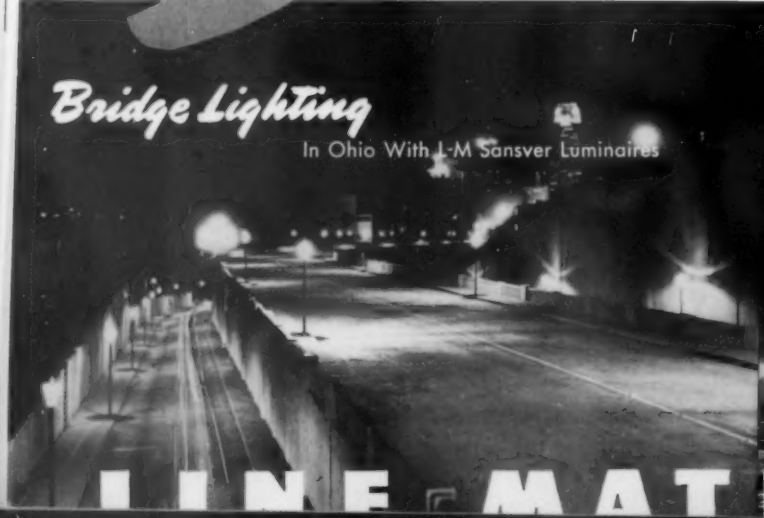

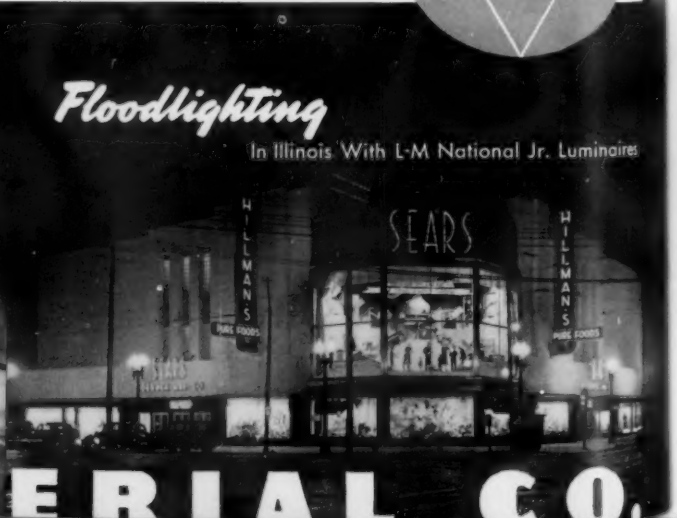

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Monotube Steel Piles for North Beach Airport
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Union Metal salutes both the city and its citizens who have made possible this fair of fairs.

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THE PORTLAND, IND., MUNICIPAL STREET-LIGHTING SYSTEM CONSISTS OF 6,000-LUMEN LAMPS IN GENERAL ELECTRIC 81S LUMINAIRES OF UNION METAL HEAVY-DUTY FLUTED STEEL STANDARDS, WITH PENDENT BRACKETS, SPACED 100 FEET APART IN OPPOSITE ARRANGEMENT ON THIS 80-FOOT STREET

schedule the investment charge per lamp ordinarily covers those fixed costs which I have described; and the energy prices are blocked to give recognition to different sizes of loads and to reduced costs during off-peak hours. In the third type of schedule all costs are combined in a charge quoted for energy alone.

Three recent tendencies in pricing street-lighting service are noteworthy. More and more contracts for street lighting are being made indeterminate or for short terms with clauses automatically renewing the contracts unless written notice of cancellation is given. This has become more feasible since 1931, when the Legislature gave the Commission the same powers over street-lighting rates as over other classes of service. The rates in such contracts are subject to adjustment by the Commission at any time, without waiting for a contract term to expire. This should have the wholesome result of minimizing those periodic heated bargaining spells which usually characterize each renewal of a street-lighting contract.

The Commission has encouraged each of the larger utilities to standardize its street-lighting schedules. As a result, at least six of the largest utilities now have standard, uniform street-lighting schedules available to all the communities they respectively serve. Progress along this line has been hampered by the great variety of street-lighting systems in use, and the consequently wide variations in costs. It is not possible to accomplish this standardization in a hurry if due regard is given to economic considerations involved.

Also, the Commission has encouraged the larger utilities to standardize on a relatively few types of street-lighting fixtures. Here is where municipal officials can especially help in reducing costs. Instead of giving your artistic impulses free reign in selecting street-lighting fixtures, so that a utility has to stock replacement parts for a dozen or fifteen different types of fixtures, select from a few standard types and thus enable the utility (or the city if it handles its own replacements) to economize by stocking fewer types of replacement parts and thus perhaps securing the discounts on large orders. This standardization of equipment cannot be done economically in a day. But it is a desirable tendency, provided the utilities will change as rapidly as is economical to well-proved superior equipment when it comes; and it is a tendency which makes a uniform rate schedule more reasonable than would otherwise be the case.

—From an address before the League of Wisconsin Municipalities.

Many Moons Over Brownsville, Texas

TWENTY-THREE new Union Metal white-way standards have been installed around the Court-House Square in Brownsville and for a distance of one block on the four streets entering the square. The standard, which is provided with a wiring handhole in its base, supports a G. E. 79R luminaire by a 4-foot steel pipe bracket. The luminaire consists of an Alzak-finished aluminum reflector surmounting and permanently attached to a Holophane refractor, and is probably the most efficient type of street-lighting equipment today available. These luminaires provide a concealed light source with a 75-degree cut-off, contain 6,000-lumen Mazda lamps, are mounted 21 feet high, and staggered 150 feet apart.

The control of this new circuit is entirely automatic, the operating being done by a Sauter time switch equipped with an astronomic dial.

As there formerly was no system of white-way lighting in this area, it would be hard to arrive at any comparative data. However, measurements seem to indicate that the present intensity of light is many times that of bright moonlight.

A. E. WHALLEY, JR,
Freeland, Roberts & Co., Engineers,
Jackson, Tenn.

Portland, Ind., Nearly Doubles Mounting Height

SEVERAL weeks ago, the white-way lighting system of the city of Portland, Ind., 6,700 population, was turned on for the first time. It provides five times the visibility of the former system and, says the municipal light and power plant, is pronounced by engineers to be the finest in the state.

The principal improvements are the mounting height of 22½ feet instead of 12 feet, and twin 6,000-lumen lamps instead of single 4,000-lumen lamps. There are 113 units equipped with two modern pendent luminaires incorporating polished Alzak aluminum reflectors, and a device to deflect light away from the buildings and onto the street. The glassware is rippled clear.

The old pole system has been taken down, and the units were re-erected on the city portions of the state highway route. These single lights in alabaster rippled glass shades were mounted only 12 feet high. This work as well as the new installation was performed by the Street Lighting Service Co., Chicago, Ill.

Credit for the successful completion of this project is due Mayor Luther Hammitt and Light Superintendent William M. Everson. An interesting development is that, whereas the 1914 installation was paid for by front-foot assessment against business men, the new installation was paid for 55 per cent by the municipal plant and 45 per cent by the Public Works Administration.

Follow the Amber Globes

NEW YORK CITY is not only installing new luminaires of its own design on 600 miles of streets, but is also installing 3,000 Gleason-Thiebaut amber rippled glass globes on the right-hand side of 90 miles of arterial streets leading to the World's Fair. New York now has a total of 26,000 modern street-lighting luminaires.

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